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SM 3058 from 3/93
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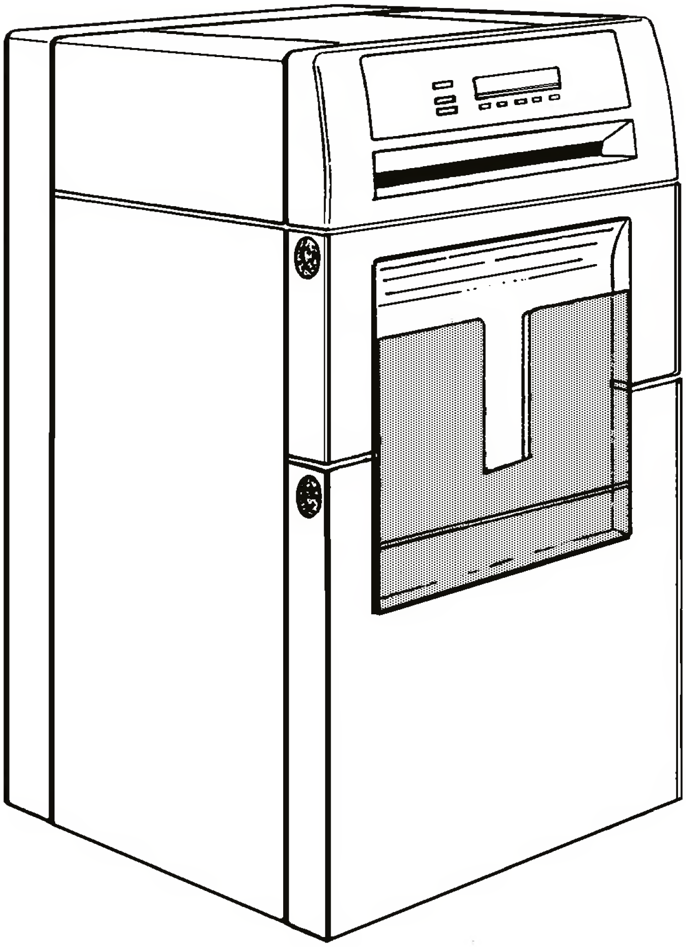
SERVICE MANUAL

for the

Kodak X-Omat MULTILOADER 300 / 300 Plus



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ELECTROSTATIC DISCHARGE

OVERVIEW

ESD—electrostatic discharge—is a primary source of:

- product downtime
- lost productivity
- costly repairs.

While we cannot even feel a static charge of less than 3,500 volts, as few as 30 volts can damage or destroy essential components in the electronic equipment upon which you rely. As technology continues to advance, these advanced components will be even more vulnerable to ESD destruction. The conclusion is clear. To take charge of productivity and profitability, you must take care of ESD, now. Effective ESD control requires the following things.

AWARENESS

Everyone in your organisation needs to be aware of ESD, because partial ESD control is no ESD control at all. Everyone needs to remember that:

- ESD is a primary source of frustrating equipment failures and intermittent malfunctions.
  ESD affects productivity and profitability.
  ESD can be controlled.

ACTION

To take charge of ESD, you must take action. And that means everyone from senior management to the evening security crew.
If you repair and maintain electronic equipment, it means always wearing grounding straps and working at ESD-protected sites.
If you ever work around electronic equipment, it means keeping static generators like plastic trash bags away from sensitive components.
For everyone, taking charge of ESD means maling the simple ESD controls a way of life. (See the following sections for special tips).

EFFECTIVE ESD CONTROL IS EVERYONE'S RESPONSIBILITY.

EVERY DAY

1. Put trash in its place. And that place is away from static-sensitive equipment. Plastic materials, like trashcan liners and plastic foam cups, generate the static electricity that damages or destroys electronic components.

2. Look for the label. Static-sensitive components are marked with bright graphic labels. Look for these labels. Follow label directions.

3. Spray the carpet. ESD that is generated when you walk over carpet is a major culprit in component destruction. In some cases, especially in low-humidity environments, you may need to periodically spray carpets with an anti-static preparation, available at local stores.

DURING MAINTENANCE AND REPAIR

- Wear a grounding strap when you deal with static-sensitive components. Always make certain that the clip is attached to a properly grounded, unpainted surface.
- Use a portable grounding mat if you cannot repair components at an ESD-protected workstation. (Kodak's Customer Equipment Services Division can assist you in setting up ESD-protected workstations.)
- Use protective packaging when you transport components from one area to another. Transparent anti static bags, available from a variety of manufactures, shield your just-repaired components from further damage.

SAFETY WARNINGS

- **BE CAREFUL WHEN WORKING IN THE CASSETTE OPENER AREA. THE OPENER MOTOR AND THE OPENER MECHANISM ARE VERY STRONG. THEY CANNOT BE MOVED MANUALLY. THEY MAY SQUEEZE YOUR HAND AND TRAP YOU IF YOU TRY TO STOP THEM MANUALLY. NEVER START THE CASSETTE OPENER MOTOR WHEN SOMEONE'S HANDS ARE IN THE CASSETTE AREA.**
- **DISCONNECT THE POWER WHEN TAKING OUT OR INSTALLING THE POWER SUPPLY. IT IS POSSIBLE TO TOUCH THE MAINS VOLTAGE.**
- **IF YOU TAKE OUT SAFETY COVERS OR WIRE TIES TO HAVE EASIER ACCESS TO PARTS, INSTALL THEM BEFORE YOU MOUNT THE SIDE PANELS WHEN THE SERVICE CALL OR THE PM IS FINISHED.**
- **BE CAREFUL WHEN WORKING ON CIRCUIT BOARDS A4 AND A8. THERE ARE 120 VAC ON THOSE BOARDS. BE ESPECIALLY CAREFUL WHEN MEASURING ON THE REAR SIDE OF THE CIRCUIT BOARDS OR WHEN A4 IS PIVOTED OUT OR A8 IS PIVOTED UP. AN ELECTRIC SHOCK MAY RESULT.**
- **WHEN WORKING IN THE AREA OF PCB A4, COVER THE VENTING HOLE AT THE TOP OF THE POWER SUPPLY SO THAT NOTHING MAY FALL INTO IT. TAKE THIS COVER OFF BEFORE MOUNTING THE SIDE PANELS TO AVOID OVERHEATING OF THE SYSTEM.**

1. SPECIAL TOOLS

VERNIER CALIPER	TL 1727
GREASE	TL 2247
TEMPLATE CASSETTE TYPE 2	9194501
METRIC ALLEN SET	TL 2764
METRIC ALLEN SET BALL ENDED	TL 3789
METRIC OPEN END WRENCH SET	TL 2765
METRIC OPEN END WRENCH 5.5mm	TL 1936
ESD KIT	TL 3346
DENTIST MIRROR	TL 2753
LOGIC PEN	TL 3008
EXTRACTION TOOL	TL 1580
EXTRACTION TOOL	TL 1654
THICKNESS GAUGE	TL 2372
LAPTOP DATA CABLE	TL 4391
TORX WRENCH SET	TL 3261
BLOW PIPE POSITIONER CASSETTE	TL 4830
BLOW PIPE POSITIONER MAGAZINE	TL 4582
CES SERVICE SOFTWARE	G9904537 / TL4462 ***

LAPTOP COMPUTER, has to be bought locally.

*** Always use the latest software version available.

2. REPLACEMENTS

INTRODUCTION

In this section it is very often explained how to use the CES SERVICE SOFTWARE. The first line tells always what should be performed. In the next lines it is explained how to reach this goal. These additional explanations are printed *italic* and can be skipped if you are experienced with the CES SERVICE SOFTWARE.

EXAMPLE:

1. Start the CASSETTE INPUT FLAP MOTOR M1

Start the SERVICE PROGRAM.
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU..................................... press ENTER
Select CASSETTE MOTORS .... press ENTER
Select INPUT FLAP MOT M1.. press ENTER
Select CLOSE/OPEN.. press ENTER

CASSETTE TRANSPORT

REPLACEMENT OF CASSETTE INPUT FLAP MOTOR.

1. Switch off the ML300.

2. Take off the PANELS.

3. Take off the MOTOR CAM.

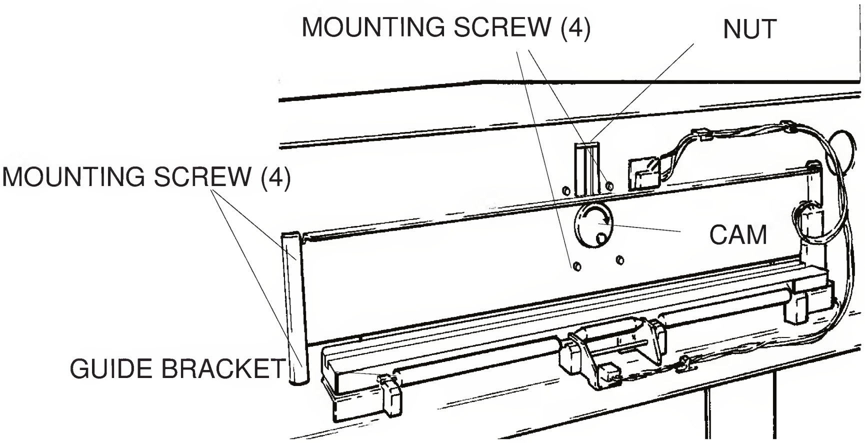


figure 2-1

4. Take out the 2 MOUNTING SCREWS of the GUIDE BRACKET.

5. Remove the NUT.

6. Take off the GUIDE BRACKET.

7. Take off the INPUT FLAP.

8. Take out the 4 MOUNTING SCREWS of the MOTOR INPUT FLAP.

9. Install the new MOTOR.

FUNCTION TEST

1. Start the CASSETTE INPUT FLAP MOTOR M1

   Start the SERVICE PROGRAM.
   Select SERVICE MODE from the GLOBAL MENU .... press ENTER
   ENTER SERVICE MODE MESSAGE is displayed... press ENTER
   UNIT DATA are displayed .... press ENTER
   Select COMPONENT TEST from the MAIN MENU..................................... press ENTER
   Select CASSETTE MOTORS .... press ENTER
   Select INPUT FLAP MOT M1.. press ENTER
   Select CLOSE/OPEN.. press ENTER

2. Make sure that the MOTOR CAM turns clockwise. If it turns counter-clockwise interchange PIN 1 and 3 at the MOTOR CONNECTOR.

3. Exit the SERVICE PROGRAM

   Press 3 times BACKSPACE.
   Select LEAVE COMPONENT TEST .... press ENTER
   Select QUIT ML300 SERVICE MODE.. press ENTER
   Select Quit the program.. press ENTER

REPLACEMENT OF THE SHORT TRANSPORT ROLLERS.

1. Switch off ML300.

2. Take off the PANELS.

3. Remove the COVER PLATE.

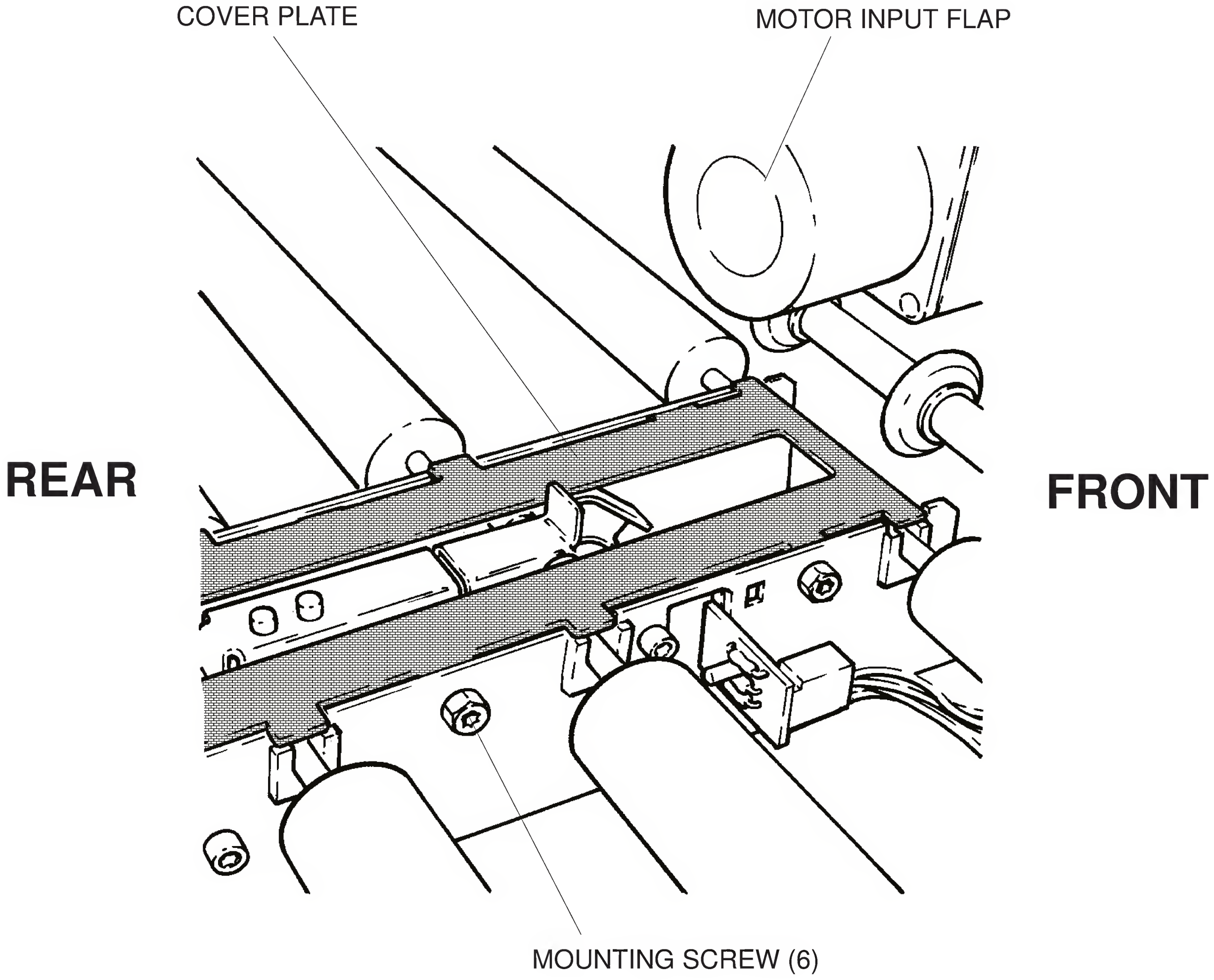

COVER PLATE
MOTOR INPUT FLAP
REAR
FRONT
MOUNTING SCREW (6)

figure 2-2

Note

There is a SPACER between the 2 BALL BEARINGS of the BELT TENSIONER.

4. Remove the FRONT BELT TENSIONER and take off the DRIVE BELT.

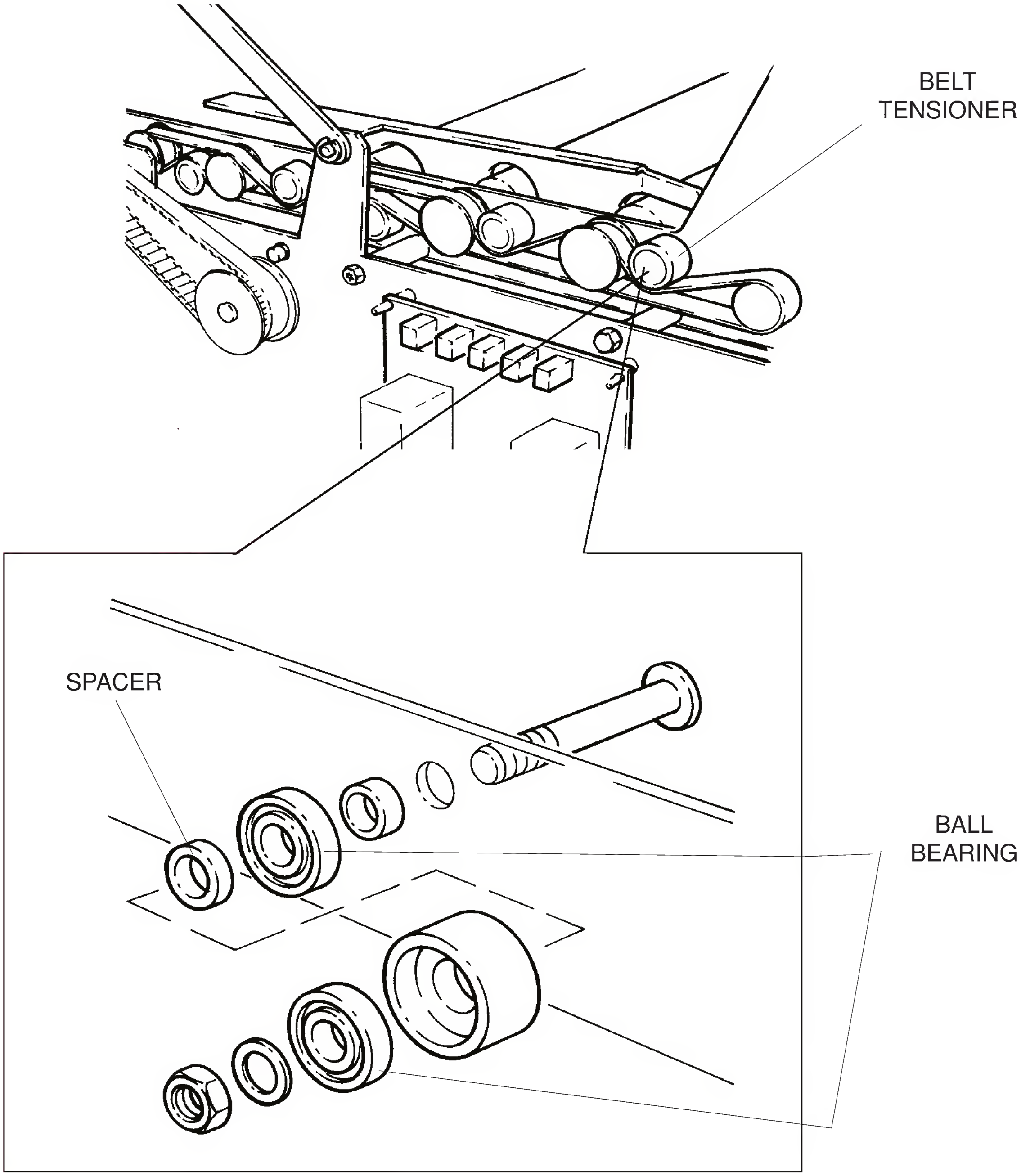

BELT
TENSIONER
SPACER
BALL
BEARING

figure 2-3

5. Take off the C-RING at the DRIVE PULLEY.

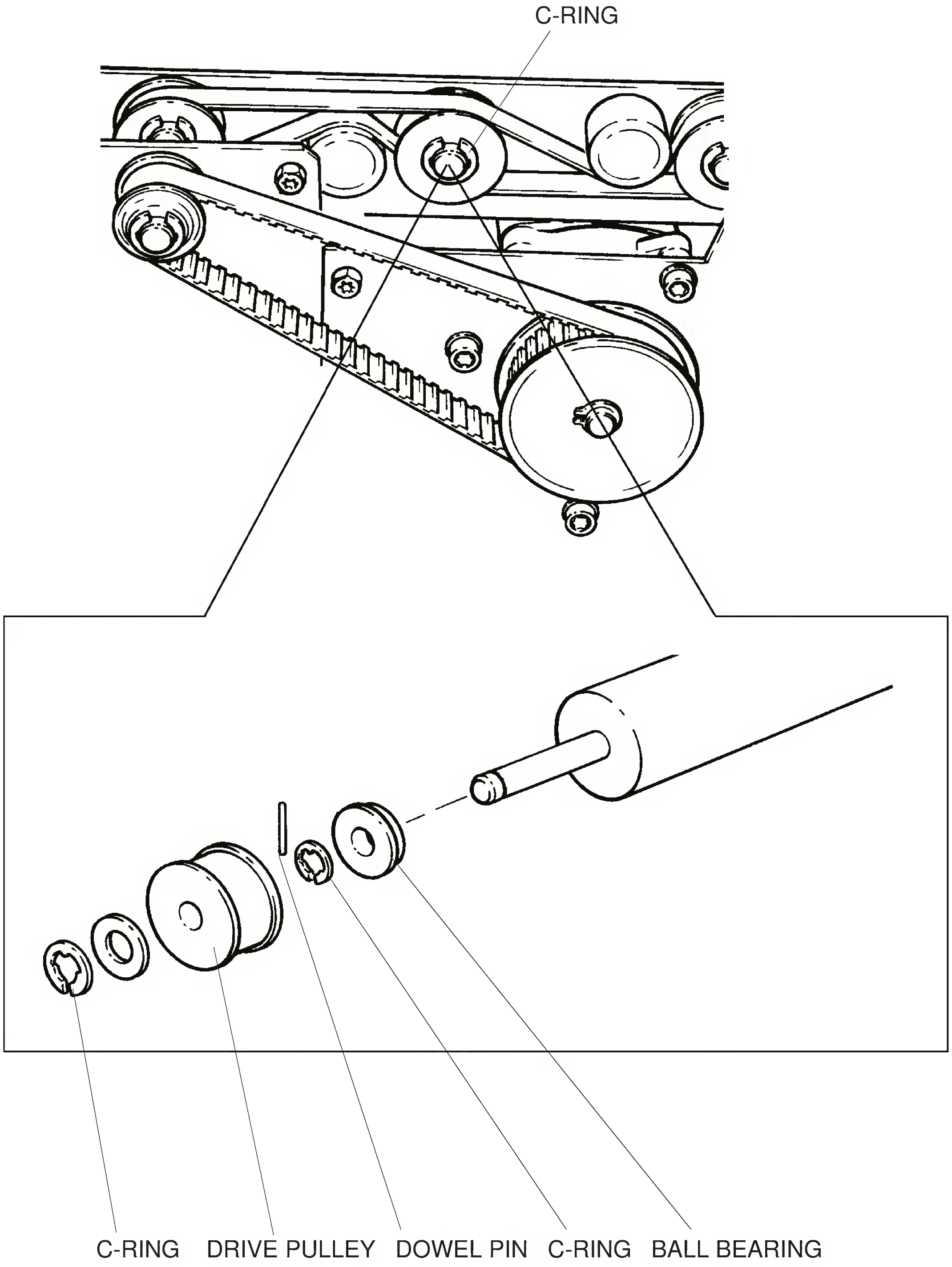

C-RING
C-RING
DRIVE PULLEY
DOWEL PIN
C-RING
BALL BEARING

figure 2-4

6. Take out the DRIVE PULLEY with the DOWEL PIN.

7. Take off the C-RING of the BALL BEARING.

8. Take off the BALL BEARING.

9. Lift the ROLLER END with the PLASTIC BEARING and pull out the TRANSPORT ROLLER.

Note

Make sure that all PLASTIC BEARINGS are installed as shown in the figure below.

10. Install the new TRANSPORT ROLLER.

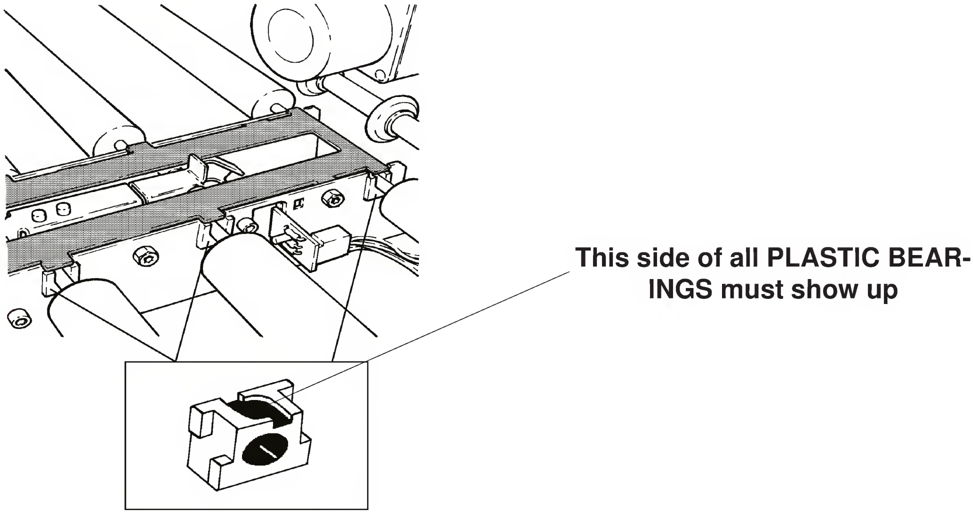


figure 2-5

FUNCTION TEST

1. Check that a CASSETTE is transported correctly forward and backward.

REPLACEMENT OF THE LONG TRANSPORT ROLLER.

1. Switch off the ML300.

2. Take off the PANELS.

3. Remove the COVER PLATE of the HOLDING FINGER ASSEMBLY.

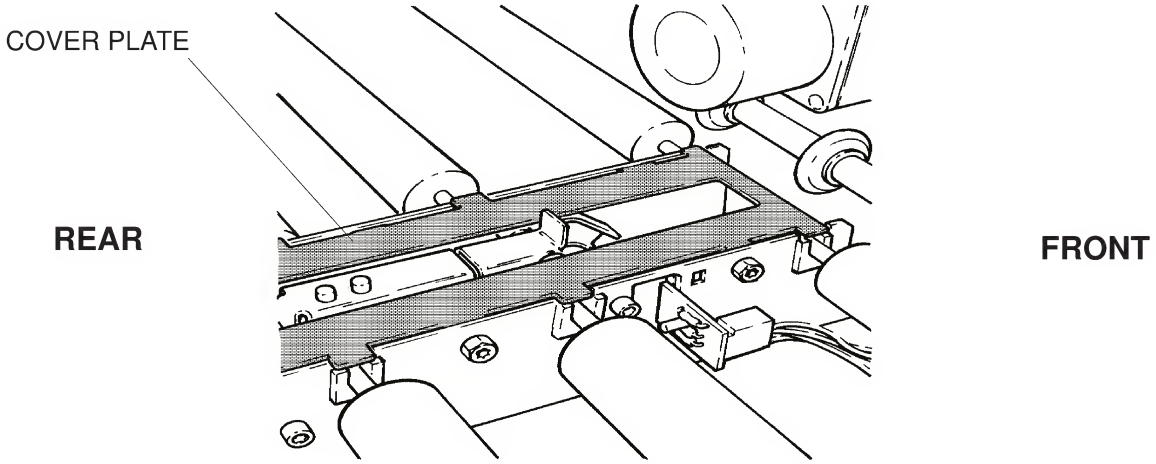

COVER PLATE
REAR
FRONT

figure 2-6

4. Loosen the MOUNTING SCREWS of the CASSETTE TRANSPORT MOTOR to take off the TIMING BELT tension.

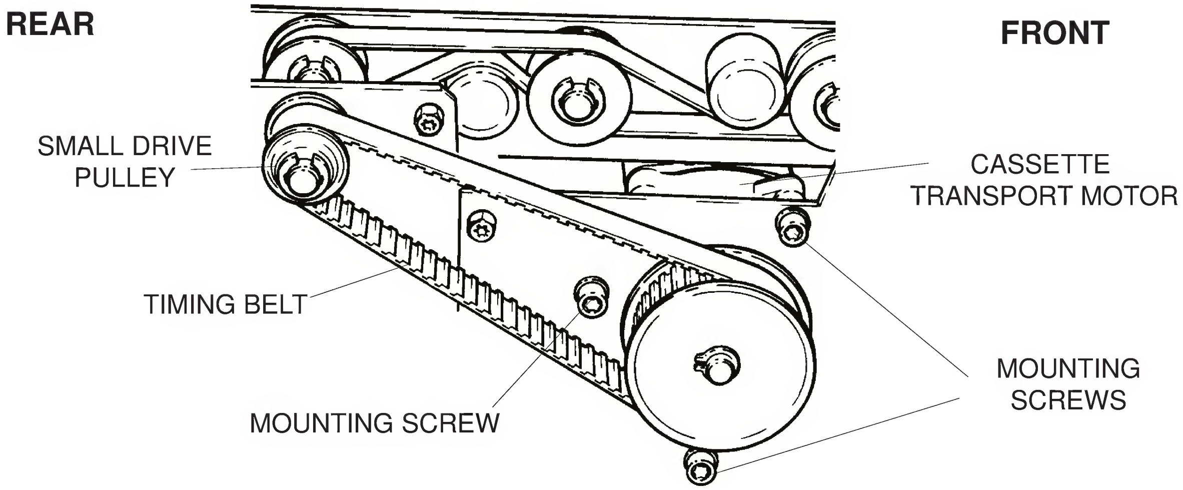

REAR
FRONT
SMALL DRIVE PULLEY
CASSETTE TRANSPORT MOTOR
TIMING BELT
MOUNTING SCREWS
MOUNTING SCREW

figure 2-7

5. Take off the small DRIVE PULLEY with the TIMING BELT.

6. Take off the DOWEL PIN and the BEARING.

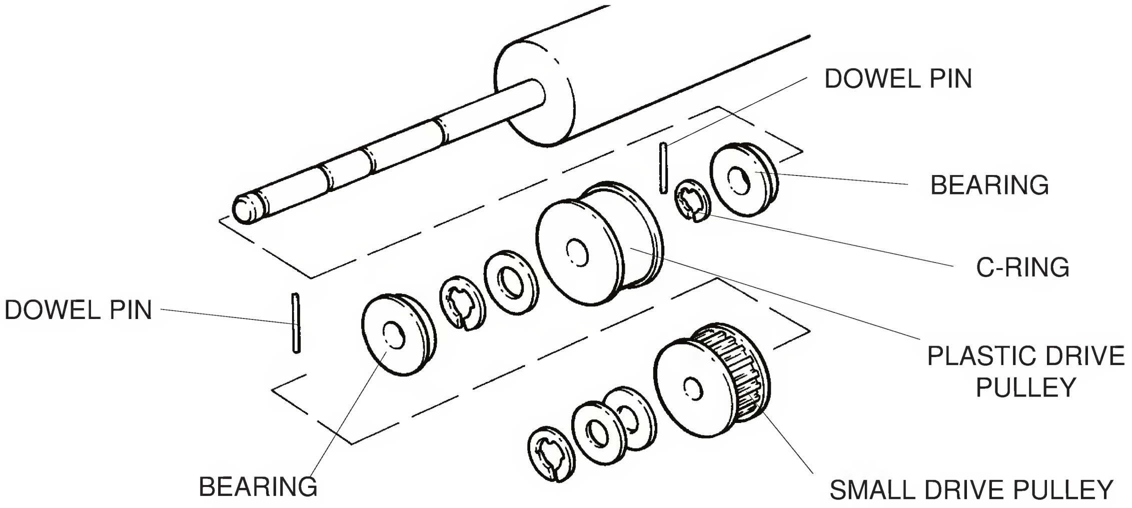

DOWEL PIN
BEARING
C-RING
PLASTIC DRIVE PULLEY
DOWEL PIN
BEARING
SMALL DRIVE PULLEY

figure 2-8

7. Take off the left side DRIVE BELT.

8. Take off the C-RING, WASHER and the DOWEL PIN of the PLASTIC DRIVE PULLEY.

9. Take off the TRANSPORT ROLLER DRIVE BELT on the right side.

10. Remove the right-hand CENTRING BAR from the MOUNTING BRACKET. To do so take out the 2 MOUNTING SCREWS and lift up the right-hand TRANSPORT ROLLERS with their BEARING SIDE.

11. Take off the right-hand PLASTIC PULLEY and BEARING of the TRANSPORT ROLLER.

12. Shift the TRANSPORT ROLLER fully to the left until it stops.

13. Lift the right end of the TRANSPORT ROLLER up and slide it out to the right.

14. Install new the TRANSPORT ROLLER.

FUNCTION TEST.

1. Check that a CASSETTE is transported correctly forward and backward.

REPLACEMENT OF THE CASSETTE WIDTH TIMING BELT.

1. Switch off the ML300.

2. Open the TOP COVER.

3. Remove the COVER PLATE.

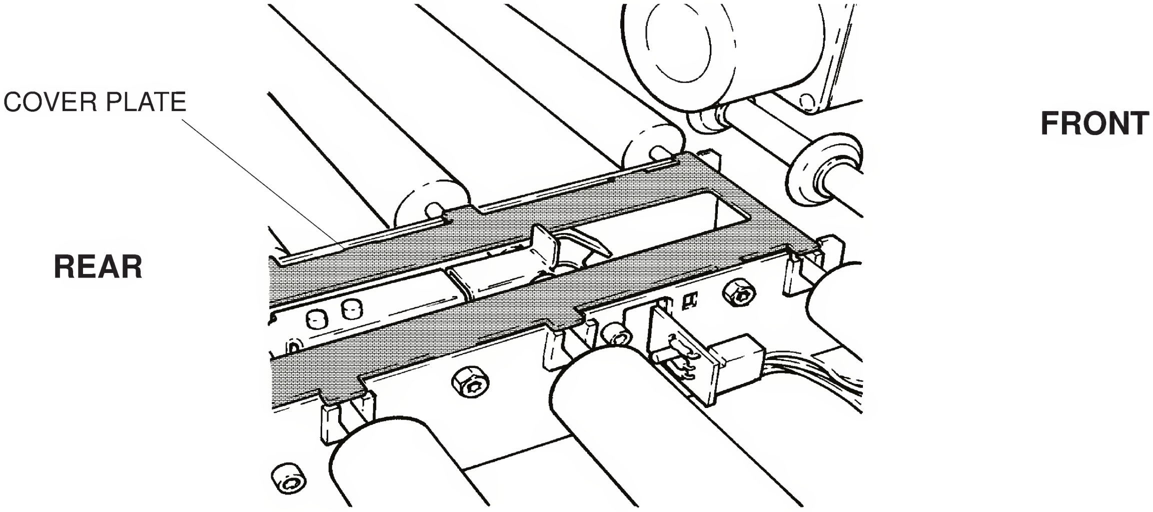

COVER PLATE
REAR
FRONT

figure 2-9

4. Take out the left GUIDE.

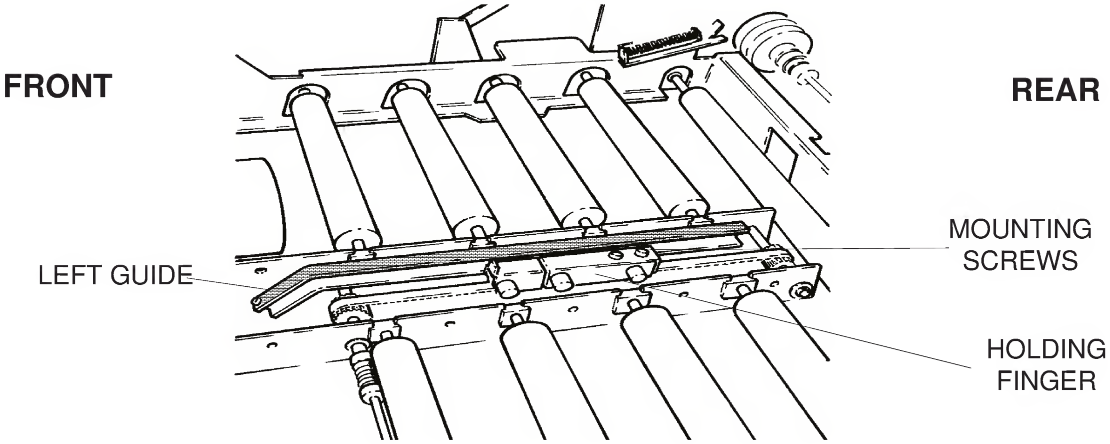

FRONT
REAR
MOUNTING SCREWS
LEFT GUIDE
HOLDING FINGER

figure 2-10

5. Loosen the MOUNTING SCREWS of the HOLDING FINGER.

6. Take out the HOLDING FINGER.

7. Take out BOARD A10 (ODOMETER CASSETTE WIDTH).

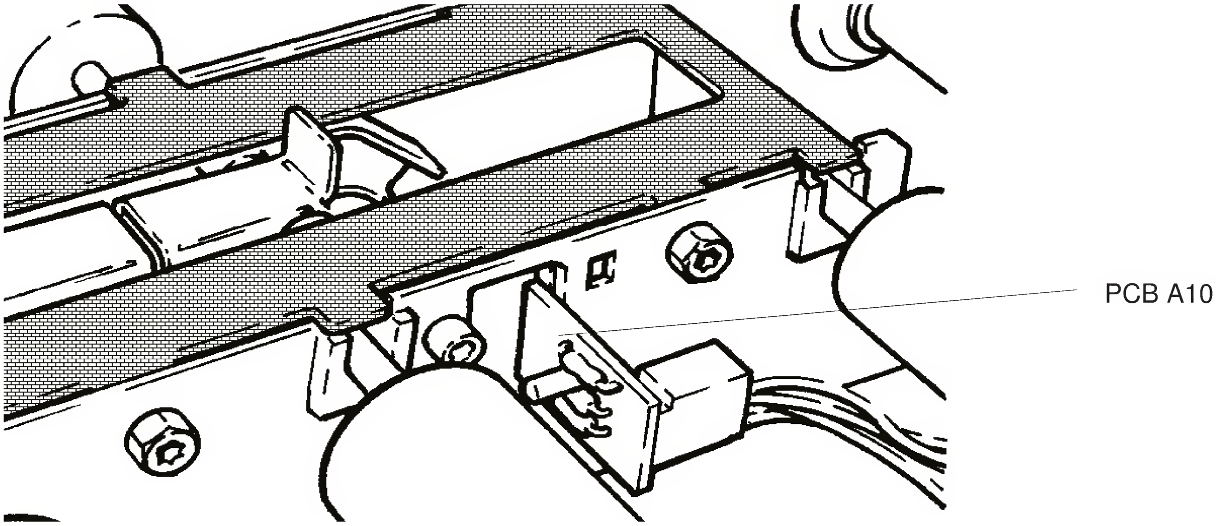


figure 2-11

8. Take out the right C-RINGS of the 2 CASSETTE TIMING BELT SHAFTS.

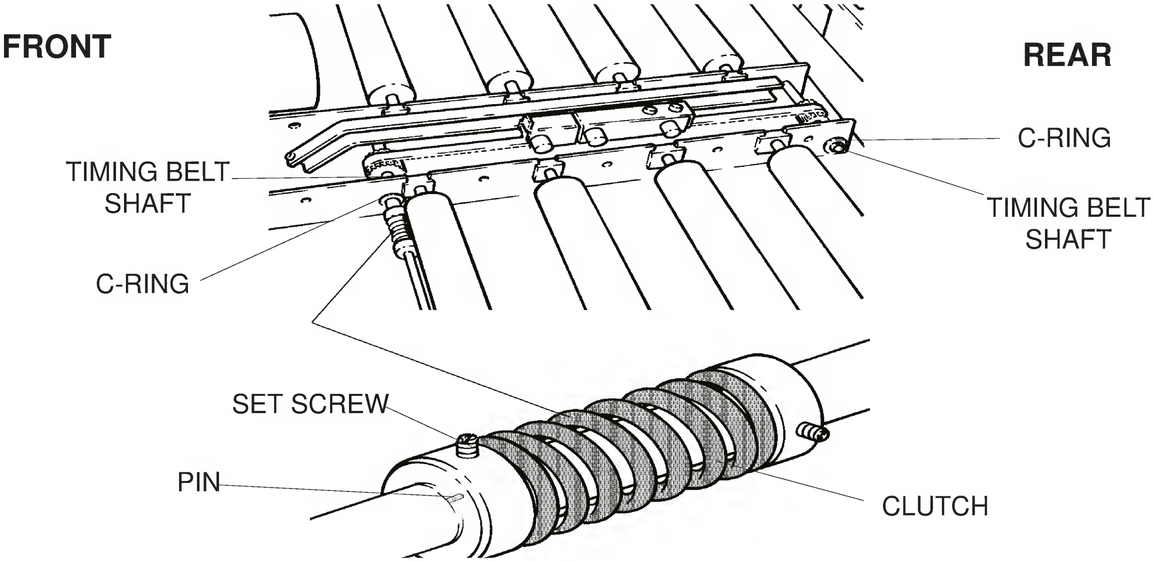

FRONT
REAR
C-RING
TIMING BELT SHAFT
TIMING BELT SHAFT
C-RING
SET SCREW
PIN
CLUTCH

figure 2-12

9. Loosen the CLUTCH SET SCREWS and take out the PIN.

10. Lift out the short TRANSPORT ROLLER near to the ODOMETER.

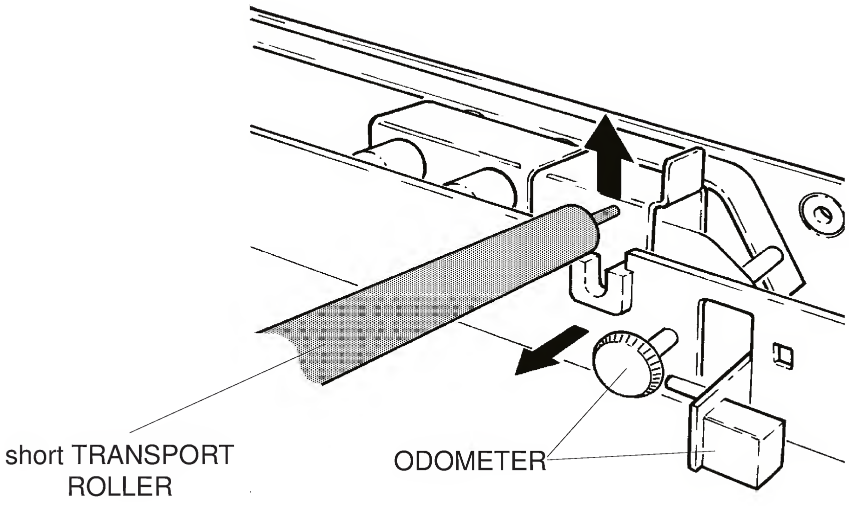

short TRANSPORT ROLLER
ODOMETER

figure 2-13

11. Shift both CASSETTE TIMING BELT SHAFTS to the left.

12. Replace the TIMING BELT.

13. When installing the HOLDING FINGER, make sure that the TIMING BELT is centred before you tighten the MOUNTING SCREWS.

14. The ODOMETER (PCB A10) has to be positioned as shown.

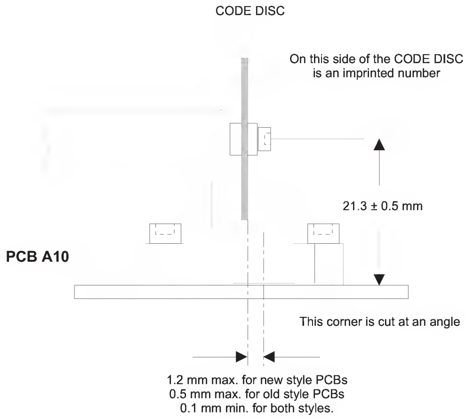

CODE DISC
On this side of the CODE DISC is an imprinted number
21.3 ± 0.5 mm
PCB A10
This corner is cut at an angle
1.2 mm max. for new style PCBs
0.5 mm max. for old style PCBs
0.1 mm min. for both styles.

figure 2-14

15. If the distance of 21.3mm is not correct, loosen the MOUNTING SCREW of the PCB HOLDER and move it as required.

Note

Not all PCB A10 are working correctly when the gap is set to 1.2 mm. Especially with the old style PCBs the gap should not be bigger than 0.5 mm.

16. If the distance of 1mm is not correct, loosen the MOUNTING SCREWS of PCBA10 and move it as required.

17. If the PCB cannot be moved far enough, take it out and elongate the MOUNTING SCREW HOLES with a small file.

FUNCTION TEST

1. Feed in a CASSETTE.
2. Check that the HOLDING FINGER transports the CASSETTE up to the CASSETTE END STOP.
3. Check that the correct CASSETTE SIZE is detected.

REPLACEMENT OF THE CASSETTE TRANSPORT MOTOR M2.

Note

Always order MOTOR PN 9228010 and RETAINING RING PN 450016

1. Switch off the ML300.

2. Take off the PANELS.

Note

THE DOWEL PIN MAY FALL DOWN

3. Take off the DRIVE PULLEY with the DOWEL PIN and the TIMING BELT.

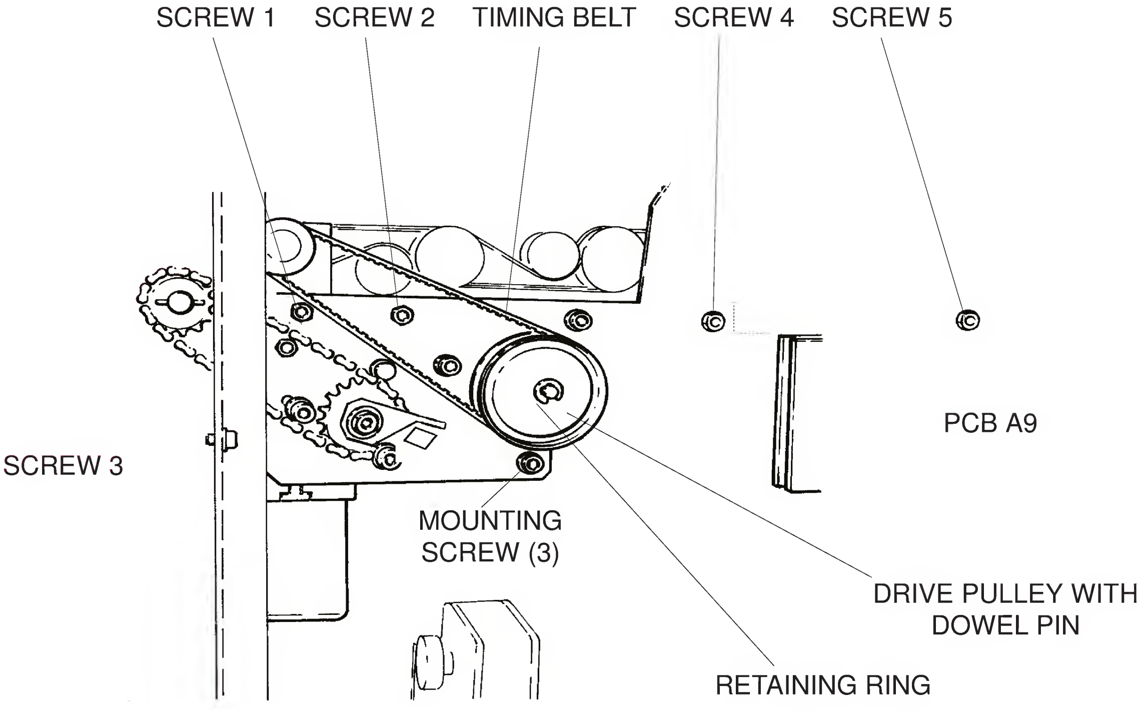

SCREW 1
SCREW 2
TIMING BELT
SCREW 4
SCREW 5
PCB A9
SCREW 3
MOUNTING SCREW (3)
DRIVE PULLEY WITH DOWEL PIN
RETAINING RING

figure 2-15

4. Loosen SCREWS 1, 2 and 3. See figure 2-15.

5. Take out SCREWS 4 and 5. See figures 2-15.

Note

The SPACERS between the MOTOR and the MOUNTING BRACKET may fall down.

6. Take out the MOUNTING SCREWS of the CASSETTE TRANSPORT MOTOR.

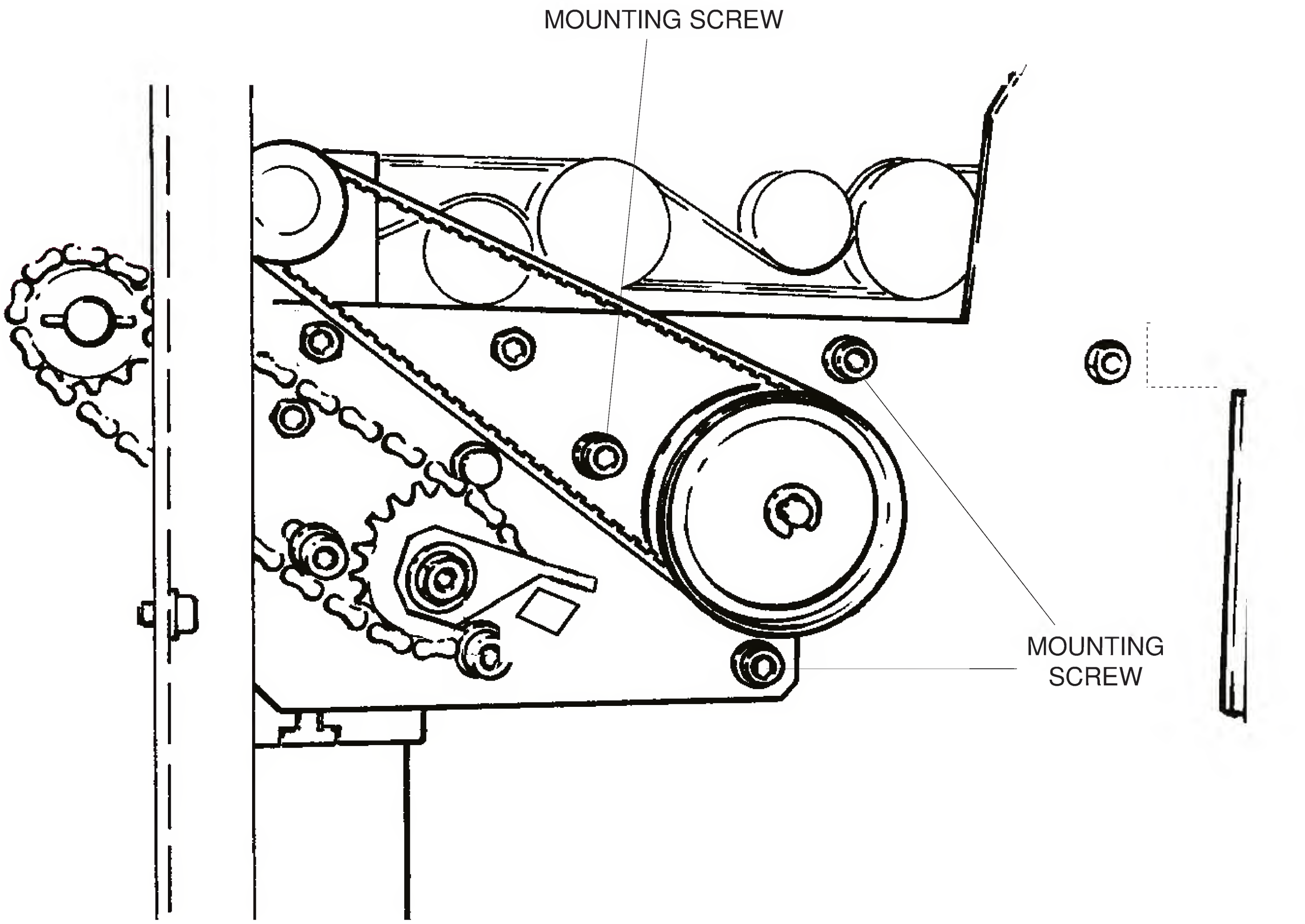


figure 2-16

7. Take out the CASSETTE TRANSPORT MOTOR.

8. Install the new MOTOR.

FUNCTION TEST.

1. Start the CASSETTE TRANSPORT MOTOR M2

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT Data are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU...................................... press ENTER
Select CASSETTE MOTORS .... press ENTER
Select CASSETTE TRANSPORT M2 .... press ENTER

2. Check that the MOTOR is running forward/backward.

Select FORWARD/BACKWARD

3. Exit the SERVICE PROGRAM

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE.. press ENTER
Select Quit the program.. press ENTER

REPLACEMENT OF THE CASSETTE OPENER MOTOR M5

1. Switch off the ML300.

2. Remove the PANELS.

3. Take off the ACTUATOR

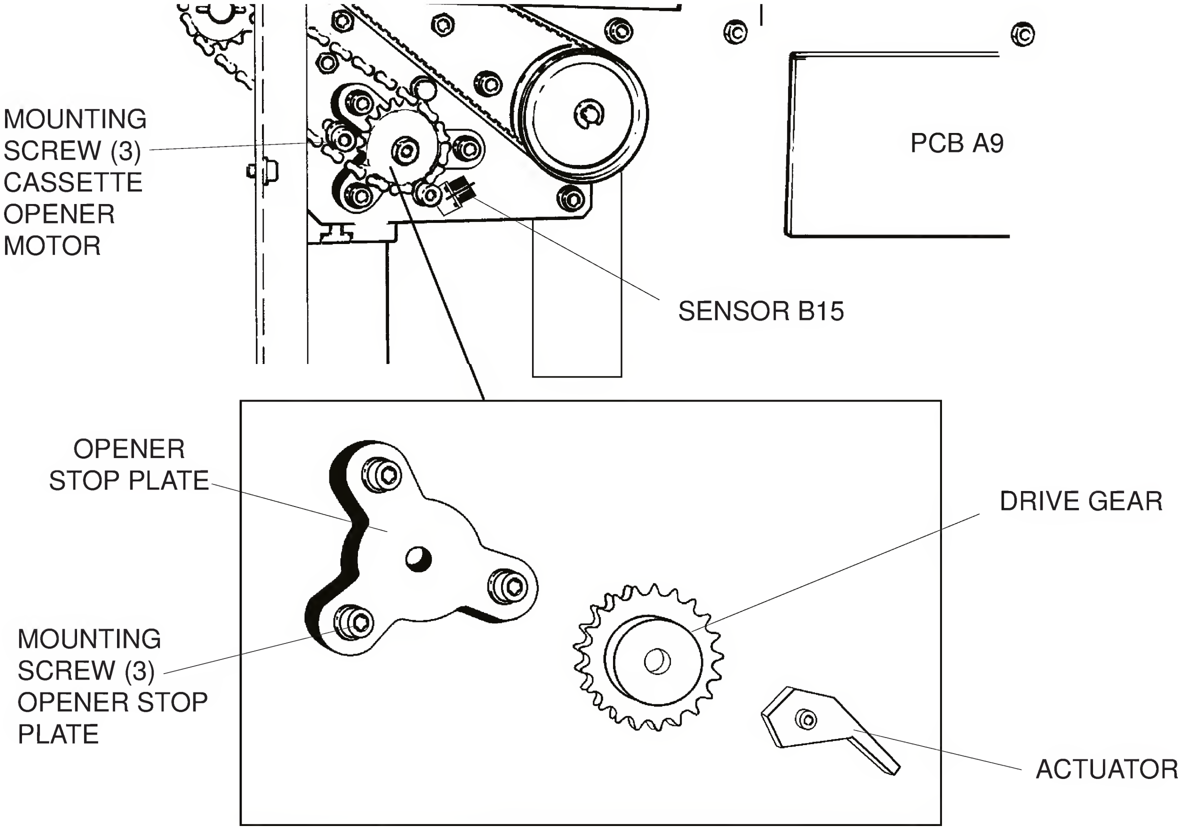

MOUNTING SCREW (3) CASSETTE OPENER MOTOR
PCB A9
SENSOR B15
OPENER STOP PLATE
DRIVE GEAR
MOUNTING SCREW (3) OPENER STOP PLATE
ACTUATOR

figure 2-17

4. Take out MOUNTING SCREWS of CASSETTE OPENER MOTOR.

5. Mark the position of the OPENER STOP PLATE.

6. Take out the MOUNTING SCREWS of the OPENER STOP PLATE.

7. Take out the DOWEL PIN of the MOTOR SHAFT.

8. Take out the STOP PLATE.

Warning

Hold with one hand the CASSETTE OPENER MECHANISM. As soon as you take off the CHAIN, the mechanism moves down and may squeeze in your fingers. When the the GEAR is off lower the CASSETTE OPENER MECHANISM to its bottom position.

9. Take off the DRIVE GEAR with the CHAIN.

10. Take out SCREW 1 to 5.

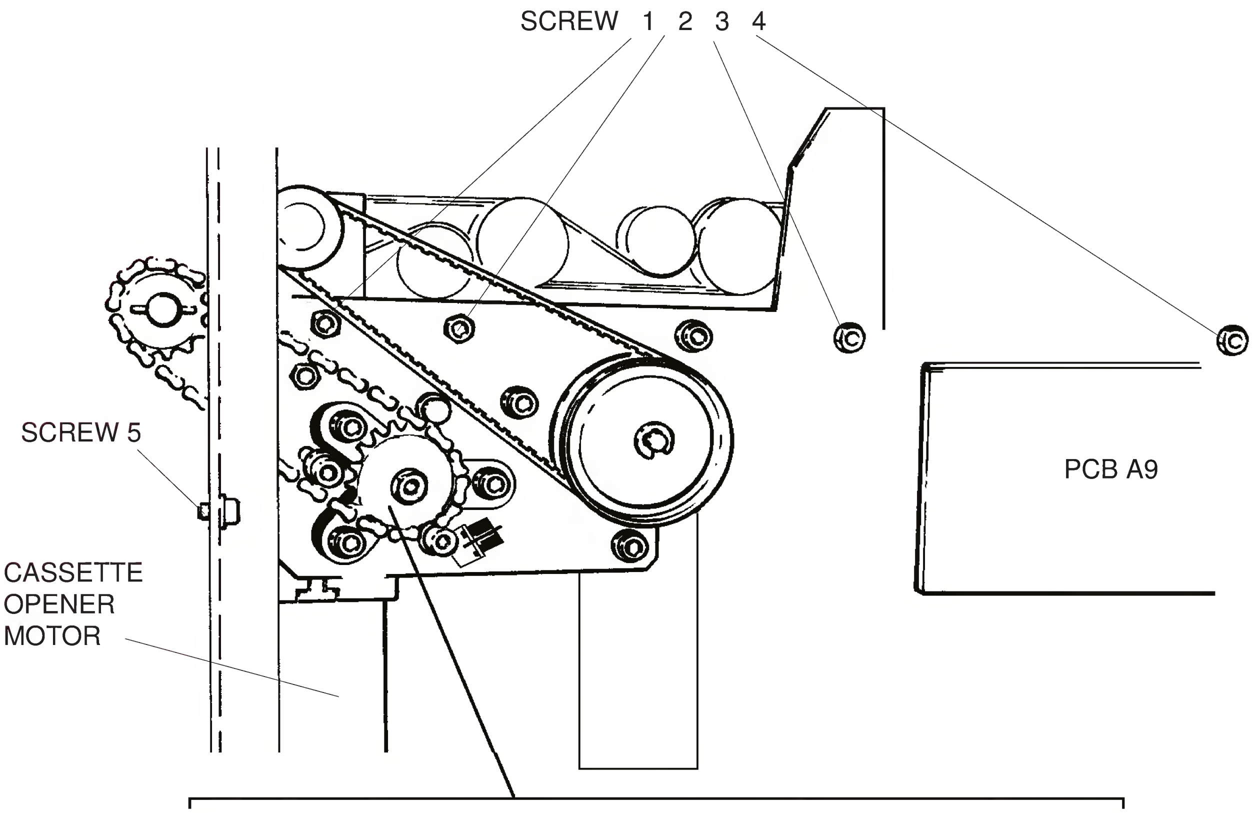


figure 2-18

11. Pull the MOUNTING PLATE forward as far as possible.

Note

The MOTOR comes off with a THREAD PLATE. This THREAD PLATE must be inserted again with the new MOTOR. It holds the OPENER STOP PLATE.

12. Take out the CASSETTE OPENER MOTOR.

13. Insert the new CASSETTE OPENER MOTOR together with the THREAD PLATE.

14. Insert and fasten SCREW 1 to 5.

15. Insert the 3 MOTOR MOUNTING SCREWS. Do not fasten them. Mount SENSOR B15/C_OP_EO.

16. Mount the OPENER STOP PLATE. Use the marks made in step 5 as reference. Tighten the MOUNTING SCREWS just a bit, that the STOP PLATE can still be moved.

Warning

BE CAREFUL WHEN WORKING IN THE CASSETTE OPENER AREA. THE OPENER MOTOR AND THE OPENER MECHANISM ARE VERY STRONG. THEY CANNOT BE MOVED MANUALLY. THEY MAY SQUEEZE YOUR HAND AND TRAP YOU IF YOU TRY TO STOP THEM MANUALLY. NEVER START THE CASSETTE OPENER MOTOR WHEN SOMEONE'S HANDS ARE IN THE CASSETTE AREA.

17. Switch on the ML300

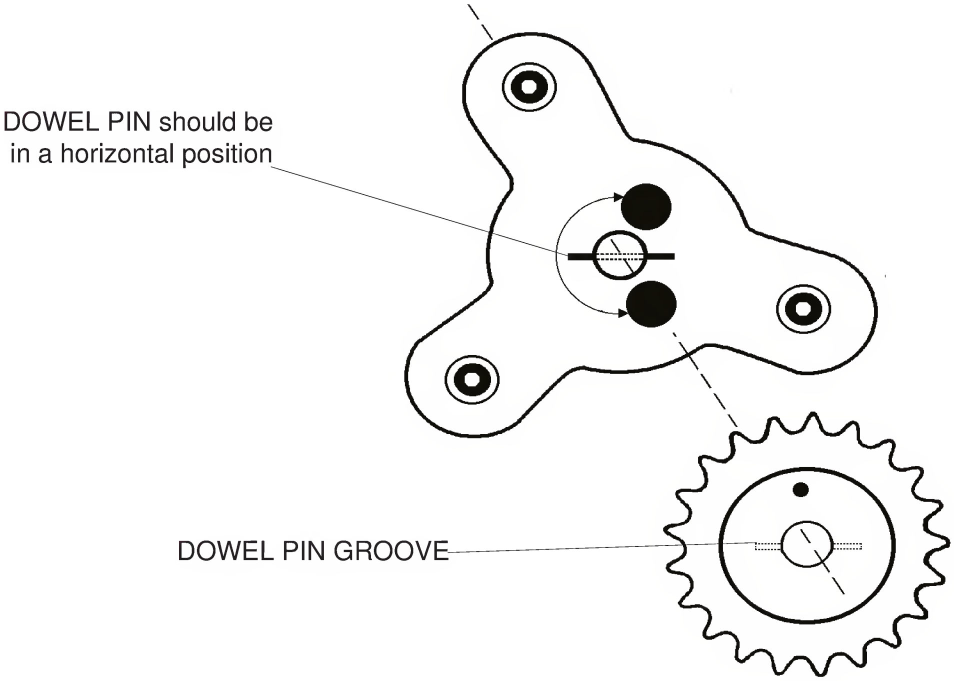


figure 2-19

18. To mount the MOTOR DRIVE GEAR the DOWEL PIN has to be in the correct position in relation to the STOP BOLTS of the STOP PLATE.

To rotate the MOTOR SHAFT use the SERVICE PROGRAM. Switch on the CASSETTE OPENER MOTOR M5 until the DOWEL PIN is in a horizontal position.

Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select CASSETTE MOTORS .... press ENTER
Select CASSETTE OPENING M5... press ENTER
Select DOWN or UP until the DOWEL PIN is in a horizontal position.

Note

The STOP PIN of the DRIVE GEAR has to be to the left of the bottom STOP BOLT. If it is to the right, the CASSETTE OPENER cannot move for the correct distance.

19. Mount the DRIVE GEAR onto the MOTOR SHAFT. Ensure that it is seated properly on the DOWEL PIN. Mount the ACTUATOR removed in step 3 to hold the DRIVE GEAR on the SHAFT. Do not tighten the ACTUATOR SCREW at this time.

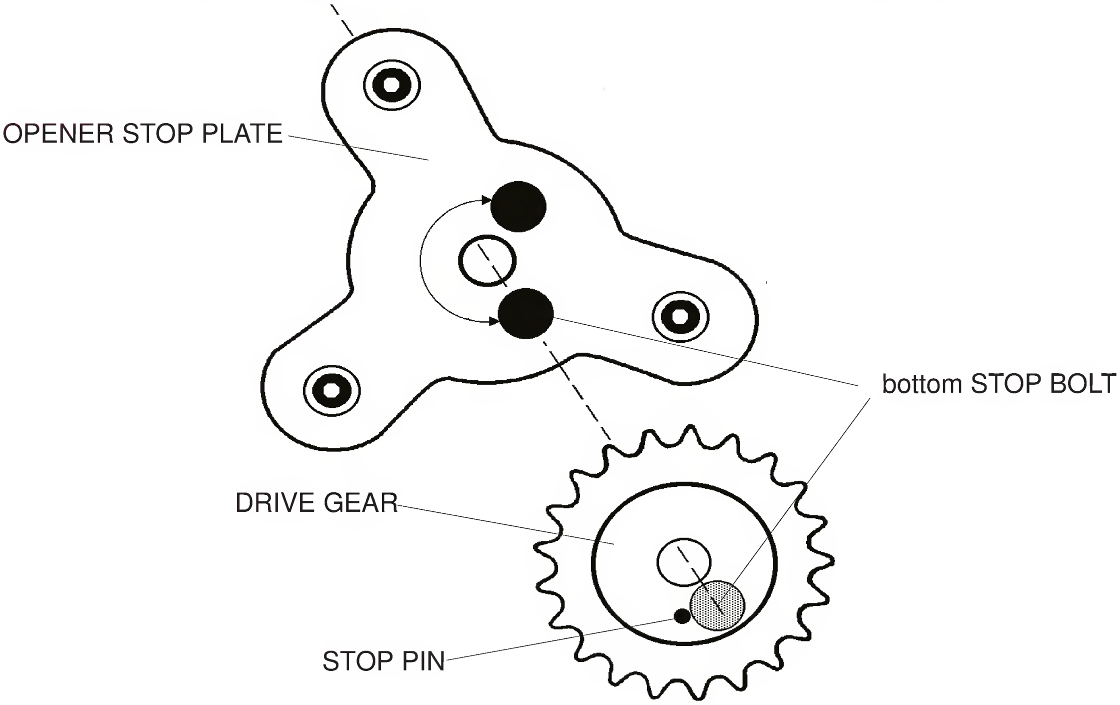


figure 2-20

20. To mount the CHAIN is the next step. To do this the CASSETTE OPENER MECHANISM and the MOTOR DRIVE GEAR have to be in the correct position.

a. The CASSETTE OPENER MECHANISM must be in its bottom position.
b. The STOP PIN of the DRIVE GEAR should just touch the bottom STOP BOLT of the STOP PLATE.

Select DOWN until the STOP PIN just touches the STOP BOLT.

21. Take off the SMALL GEAR.

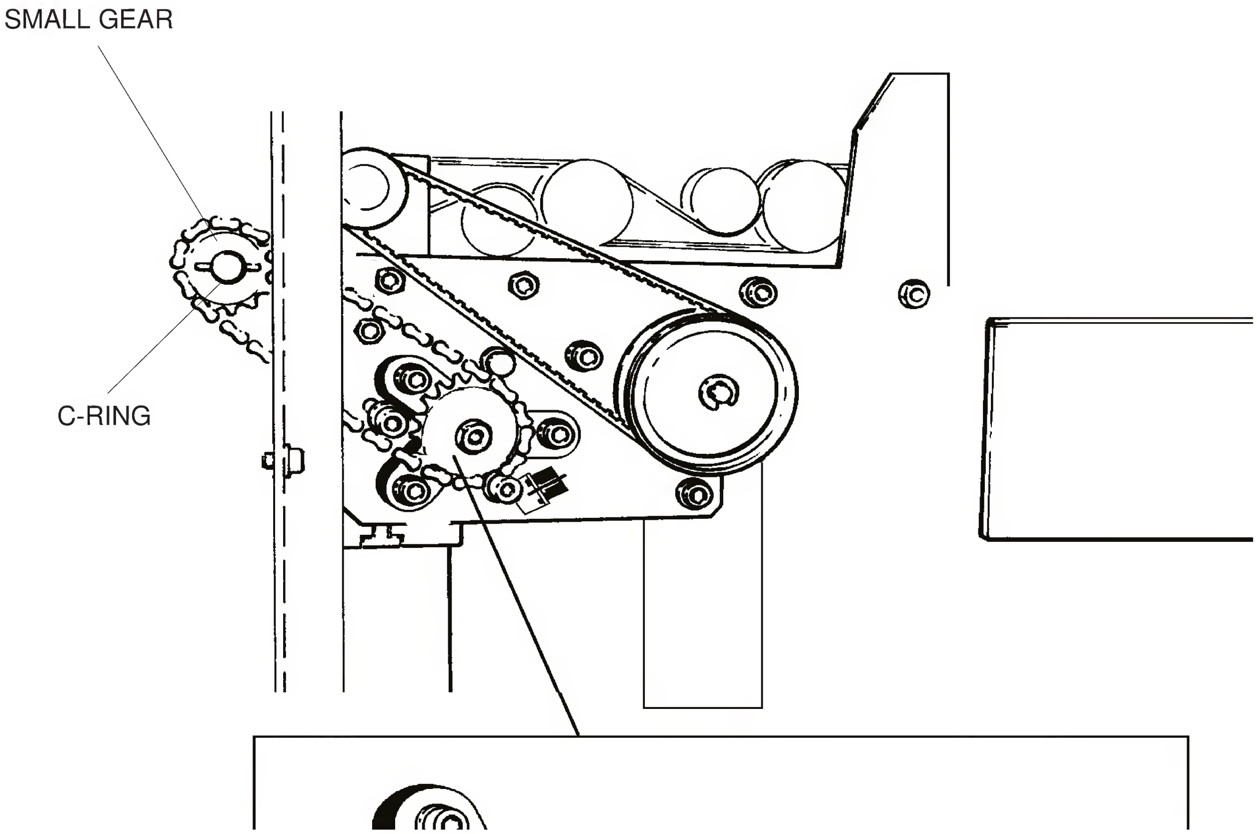


figure 2-21

22. Mount the CHAIN onto the MOTOR DRIVE GEAR and onto the SMALL GEAR.

23. Put the small GEAR onto its SHAFT and secure it with the C-RING.

24. Tension the CHAIN by moving the CASSETTE OPENER MOTOR to the right.

25. Tighten the MOTOR MOUNTING SCREWS.

26. Move the CASSETTE OPENER to its fully up position.
Select UP until the OPENER BRACKET is vertical.

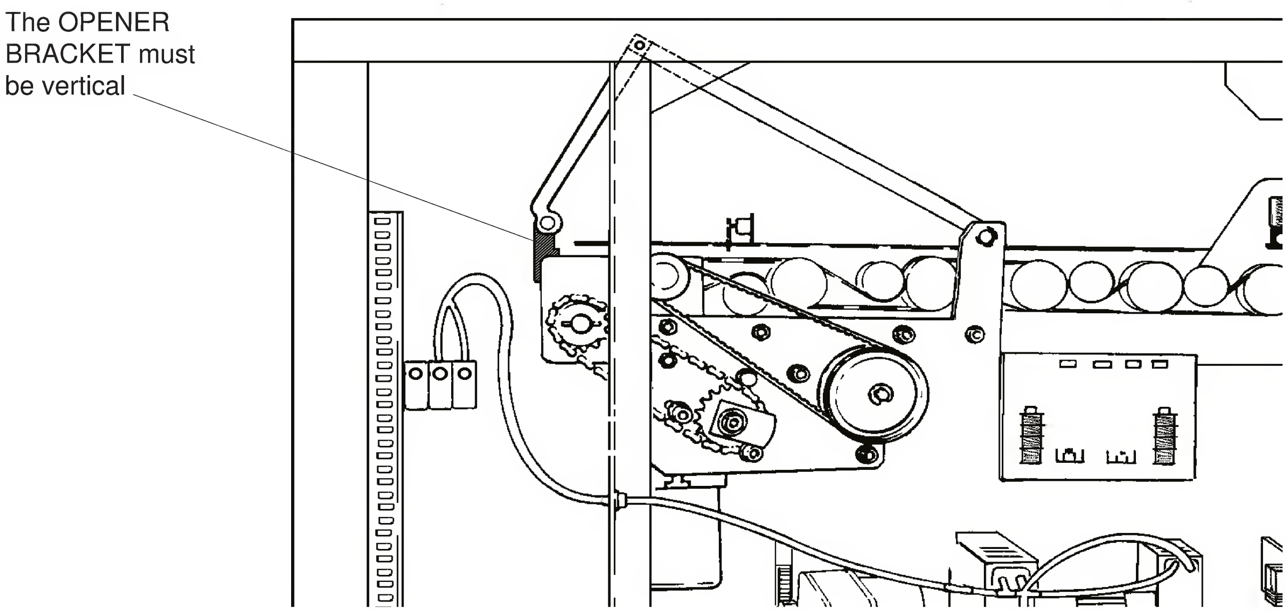
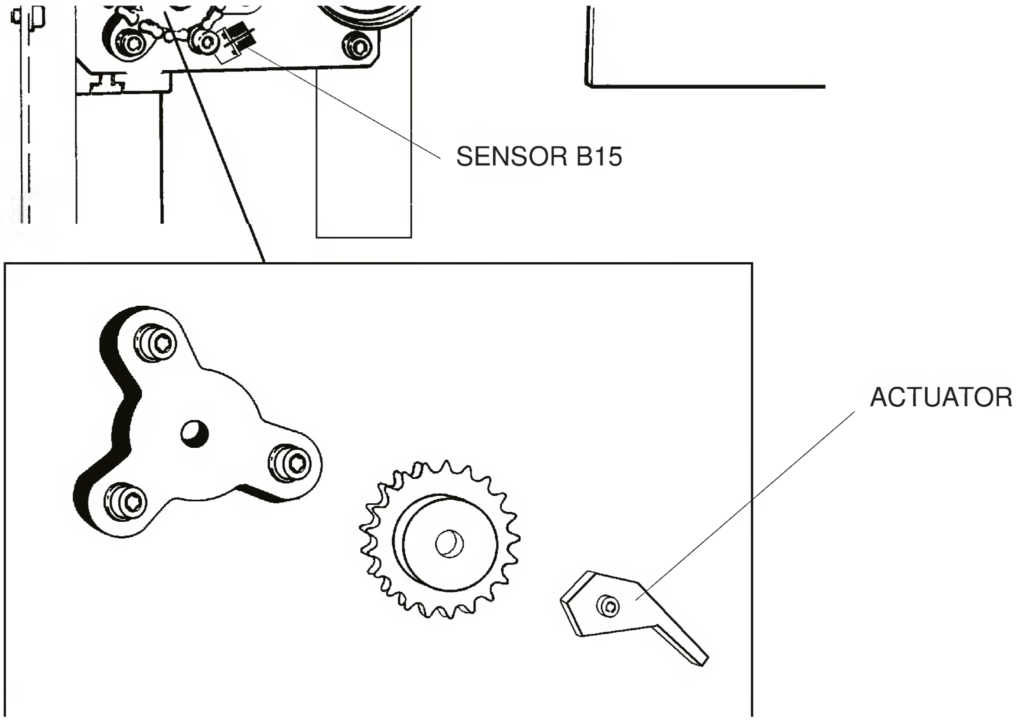

The OPENER
BRACKET must
be vertical

figure 2-22

27. Adjust the ACTUATOR that SENSOR B15 is actuated. Tighten its MOUNTING SCREW.


SENSOR B15
ACTUATOR

28. The ACTUATOR must now be set to a position that the CASSETTE OPENER MOTOR is switched off as soon as the OPENER BRACKET is vertical.

Select DOWN until the OPENER is fully down

Select UP until the OPENER stops

29. If the OPENER BRACKET is vertical proceed with step 30. If not proceed here. Reposition the ACTUATOR as required and proceed with step 28.

30. SENSOR B15 is now adjusted correctly. The next step is to adjust the OPENER STOP PLATE.

Note

It is not possible to see this gap. You have to set it by feeling.

31. The OPENER is still in the upper position. Turn the STOP PLATE counter-clockwise until the STOP BOLT touches the STOP PIN of the DRIVE GEAR. Turn the STOP PLATE clockwise until there is a gap of approximately 1mm between the STOP PIN and the STOP BOLT.

32. Tighten the MOUNTING SCREWS of the STOP PLATE.

33. Check the position of the STOP PLATE.

-Disconnect SENSOR B15(CONNECTOR X9)

-Select UP. The MOTOR M5 must turn for a short distance and is stopped then. A high pitched tone can be heard at the same time.

-Connect SENSOR B15.

-Select DOWN until the CASSETTE OPENER stops in its bottom position.

-Manually actuate SENSOR B15. Do not break its thin PLASTIC ACTUATOR.

-Select DOWN again. MOTOR M5 should turn for a short distance and is stopped then. A high pitched tone can be heard at the same time.

-Select UP until the CASSETTE OPENER stops in its uppermost position.

If the UP and DOWN positions are correct, proceed with step 34. Otherwise reposition the STOP PLATE and repeat step 33.

34. Exit the SERVICE MODE.

Press 3 times BACKSPACE

Select LEAVE THE COMPONENT TEST .... press ENTER

Select QUIT ML300 SERVICE MODE .... press ENTER

Select Quit the program .... press ENTER

FUNCTION TEST.

Warning

BE CAREFUL WHEN WORKING IN THE CASSETTE OPENER AREA. THE OPENER MOTOR AND THE OPENER MECHANISM ARE VERY STRONG. THEY CANNOT BE MOVED MANUALLY. THEY MAY SQUEEZE YOUR HAND AND TRAP YOU IF YOU TRY TO STOP THEM MANUALLY. NEVER START THE CASSETTE OPENER MOTOR WHEN SOMEONE'S HANDS ARE IN THE CASSETTE AREA.

1. Take out the MAGAZINES loaded with CUSTOMER FILMS to avoid film fogging.
2. Run several cycles with test films.
3. Check that the OPENER BRACKET is vertical when the CASSETTE is open.
4. Check that the CASSETTE is correctly closed.

REPLACEMENT OF THE CASSETTE OPENER SOLENOID Y4.

1. Switch off the ML300.
2. Take off the PANELS.
3. Unplug the CASSETTE OPENER SOLENOID (Connector X40).
4. Take out the 2 NUTS from the CASSETTE OPENER SOLENOID.

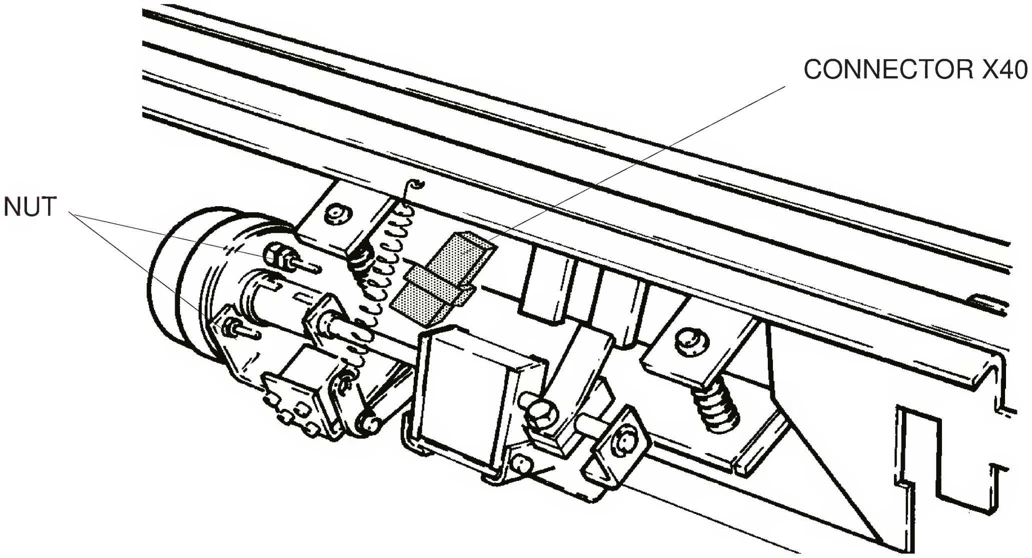


figure 2-24

5. Install the new CASSETTE OPENER SOLENOID.

6. Adjust the CASSETTE OPENER SOLENOID.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select SOLENOIDS .... press ENTER
Select CASSETTE OPENER Y4 .... press ENTER
Select SOLENOID ON

7. If the OPENER SHOVEL is only just touching the OPENER PLATE, proceed with step 9, else proceed with step 8.

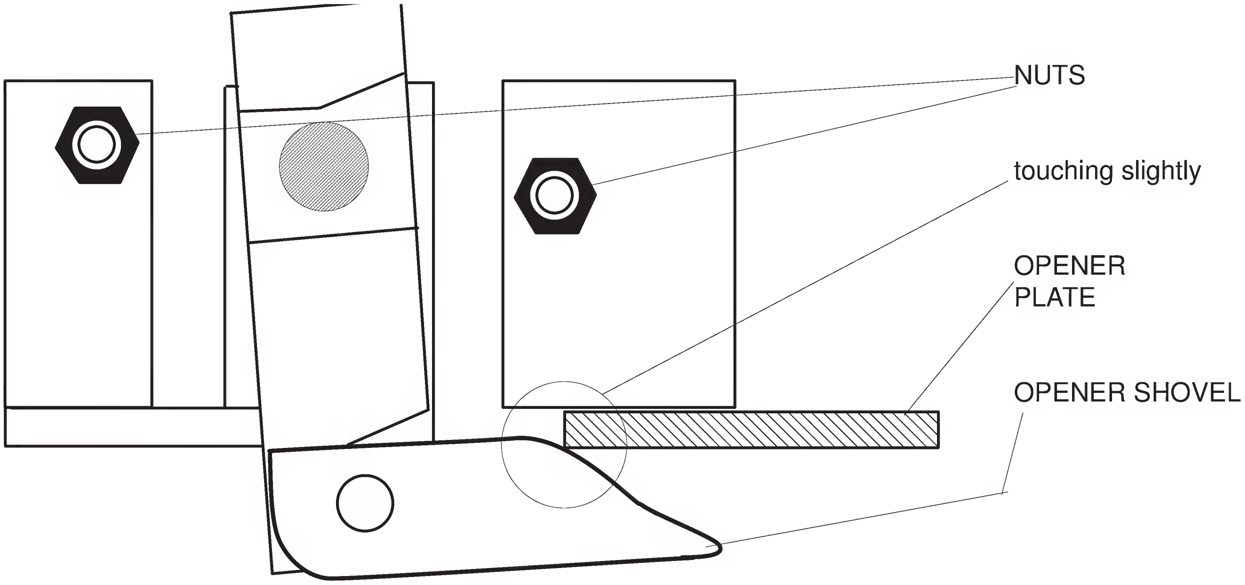


figure 2-25

Do not turn the SOLENOID too far, the BLOCK LEVER may slide under the LEVER STOP. See the drawing on the next page.

8. Loosen the NUTS and turn the OPENER SOLENOID Y4 until the OPENER SHOVEL is just touching the OPENER PLATE. Tighten the NUTS.

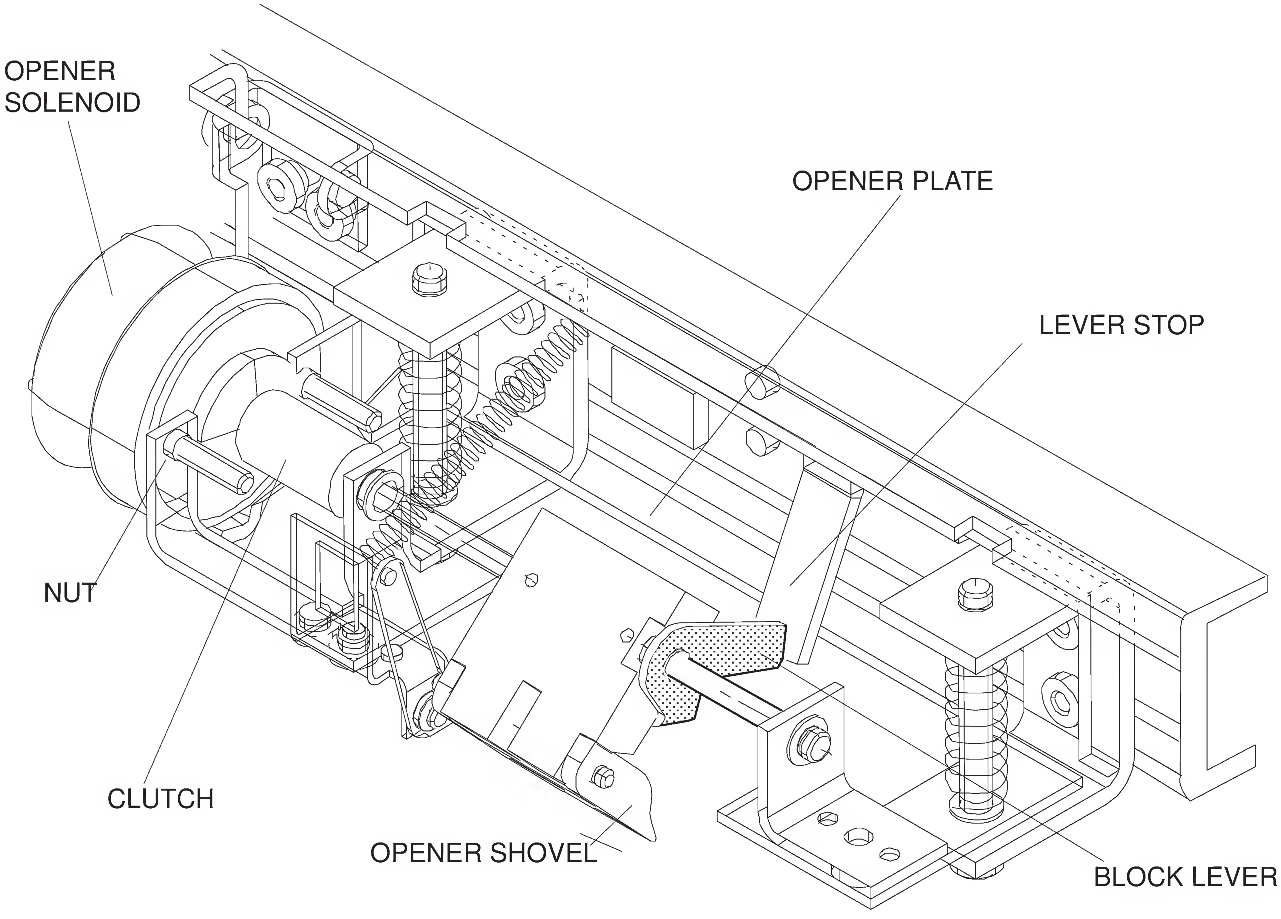

OPENER SOLENOID
OPENER PLATE
LEVER STOP
NUT
CLUTCH
OPENER SHOVEL
BLOCK LEVER

figure 2-26

9. Make sure that the CLUTCH can be moved slightly to left and right using low force only.

10. Exit the SERVICE PROGRAM.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

FUNCTION TEST.

1. To avoid fogging CUSTOMER FILMS load the MAGAZINES with TEST FILMS.

2. Run several cycles with different CASSETTES. Check that they are opened correctly.

3. Reload the MAGAZINES with CUSTOMER FILMS.

MAGAZINE OPENER

REPLACEMENT OF THE MAGAZINE OPENER MOTOR M14.

1. Switch off the ML300.
2. Take off the Panels.
3. Move the MAGAZINE OPENER to the “CLOSED” position.
4. Take out all MAGAZINES.
5. Move the MAGAZINE OPENER to the “OPENED” position.
6. Take out the 2 BRACKET MOUNTING SCREWS.
7. Take out the MOTOR CONNECTOR from the FRAME.
8. Take out the OPENER ASSEMBLY.

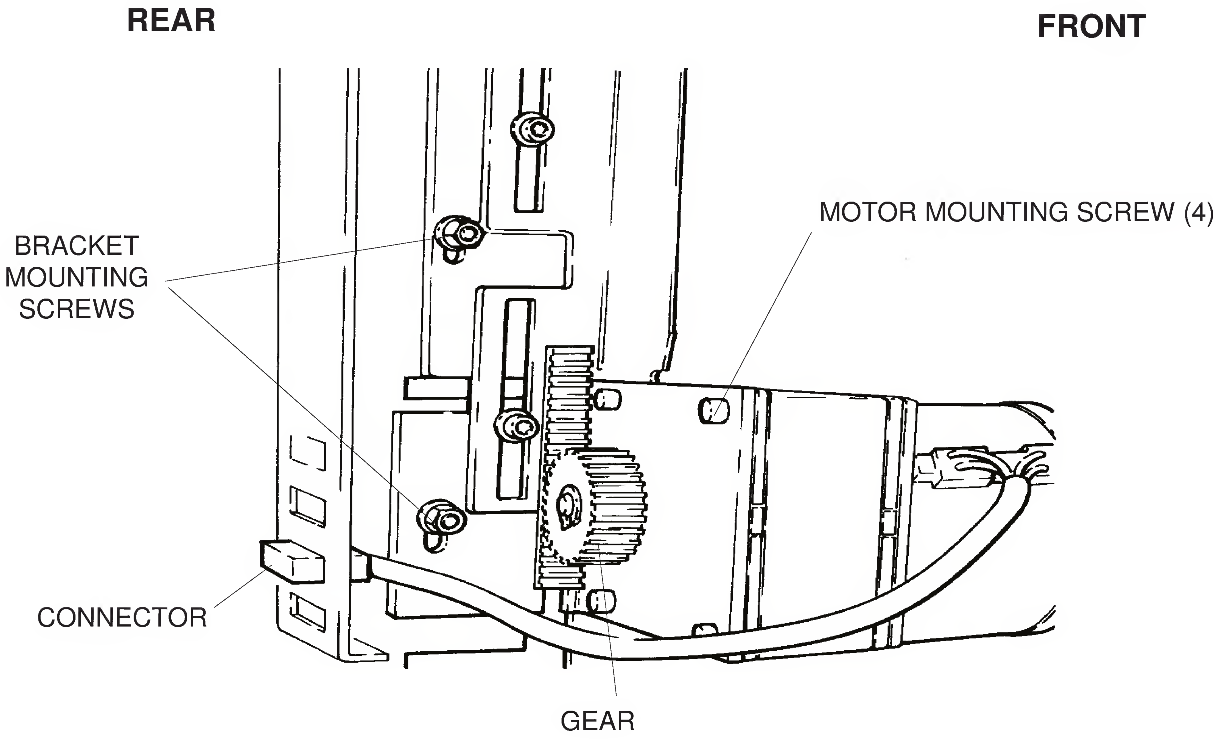

REAR
FRONT
MOTOR MOUNTING SCREW (4)
BRACKET MOUNTING SCREWS
CONNECTOR
GEAR

figure 2-27

9. Take off the GEAR.

10. Take out the MOTOR MOUNTING SCREWS.

11. Install the new MAGAZINE OPENER MOTOR.

12. Move the MAGAZINE OPENER MOTOR to the “CLOSED” position.

13. Fasten the MOUNTING SCREWS.

14. Do the MAGAZINE OPENER MOTOR ADJUSTMENT as described in the section ADJUSTMENT PROCEDURES.

FUNCTION TEST.

No special FUNCTION TEST is necessary. The function of MOTOR M14 was tested during the adjustments.

FILM POCKET

REPLACEMENT OF THE FILM POCKET STEPPER MOTOR M10.

1. Switch off the ML300.

2. Take off the PANELS.

3. Take out the FILM CONVEYOR. See procedure REMOVAL OF CONVEYOR.

4. Loosen the STEPPER MOTOR MOUNTING SCREWS.

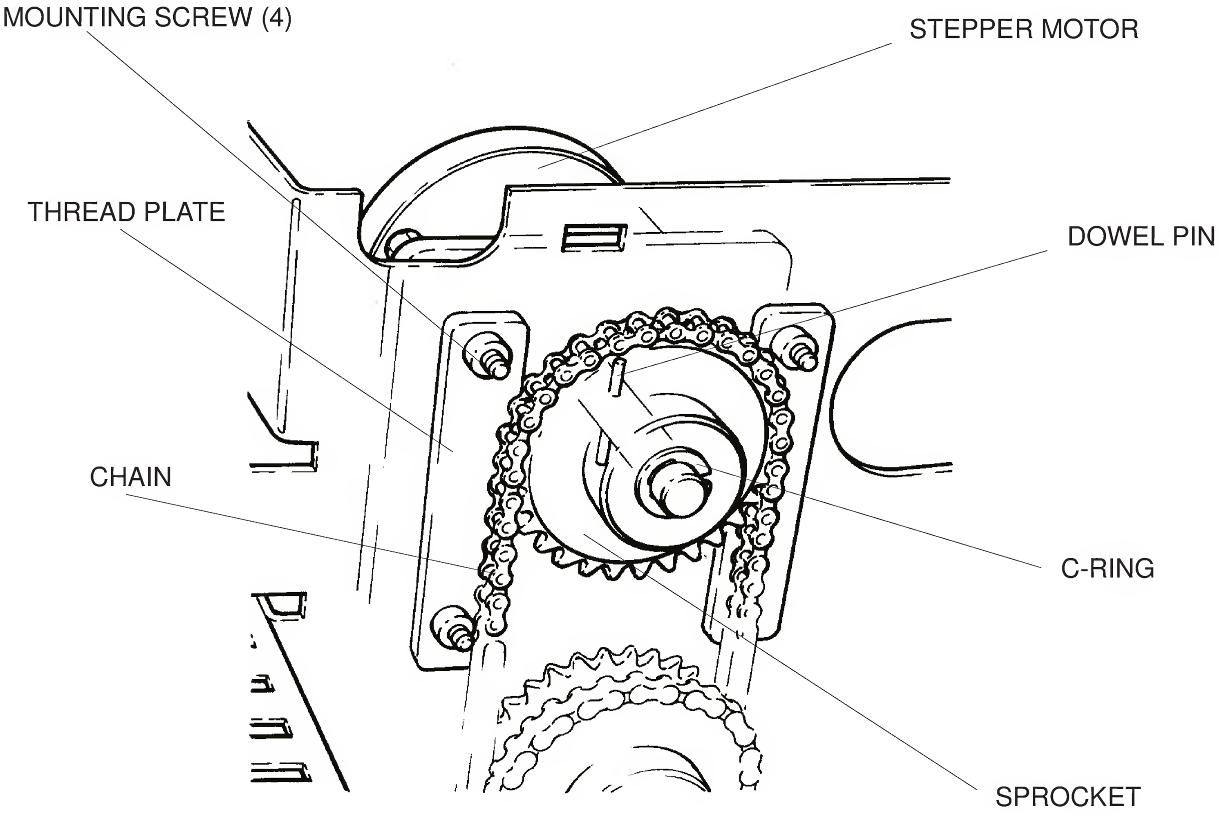

MOUNTING SCREW (4)
STEPPER MOTOR
THREAD PLATE
DOWEL PIN
CHAIN
C-RING
SPROCKET

figure 2-28

5. Take off theCHAIN from the SPROCKET.

Note

Take care of the DOWEL PIN it may fall down.

6. Take off the C-RING and take out the SPROCKET.

7. Take out the STEPPER MOTOR MOUNTING SCREWS.

8. Install new the STEPPER MOTOR.

9. Move the STEPPER MOTOR up to tension the CHAIN.

10. Tighten the MOUNTING SCREWS.

FUNCTION TEST

1. To test the function of the FILM POCKET STEPPER MOTOR do a SCAN RUN.
   Start the SERVICE PROGRAM.
   Select SERVICE MODE from the GLOBAL MENU .... press ENTER
   ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
   UNIT DATA are displayed .... press ENTER
   Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
   Select CHANGE PARAMETER .... press ENTER
   Select SCAN RUN .... press ENTER
   Select STORE PARAMETERS .... press ENTER

2. Exit the SERVICE PROGRAM
   Press BACKSPACE twice
   Select QUIT ML300 SERVICE MODE .... press ENTER
   Select Quit the program .... press ENTER

REPLACEMENT OF THE FILM POCKET SUCKER BAR MOTOR M15.

1. Switch off the ML300.

2. Take off the PANELS.

3. Take out the FILM CHUTE.

4. Cut the WIRE TIE and unplug the FILM POCKET MOTOR.

Caution

HOLD THE MOTOR. IT MIGHT FALL DOWN.

5. Take out the 4 MOUNTING SCREWS.

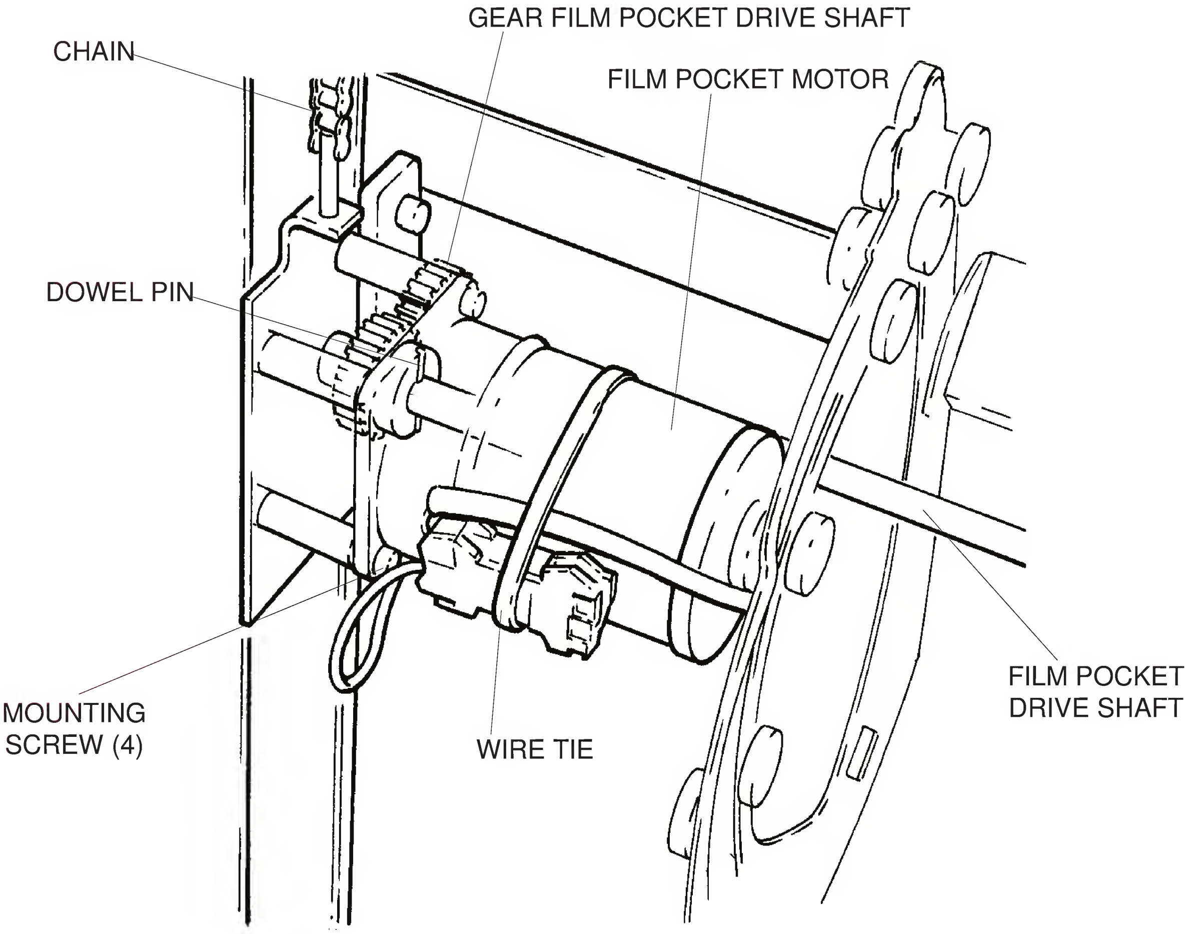

GEAR FILM POCKET DRIVE SHAFT
CHAIN
FILM POCKET MOTOR
DOWEL PIN
FILM POCKET DRIVE SHAFT
MOUNTING SCREW (4)
WIRE TIE

figure 2-29

Note

Use the DOWEL PIN and the GEAR from the old MOTOR.

6. Install the new FILM POCKET MOTOR.

FUNCTION TEST.

1. Take out all MAGAZINES.

2. Check that the FILM POCKET SUCKER BAR ARM moves forward and backward.

   Start the SERVICE PROGRAM
   Select SERVICE MODE from the GLOBAL MENU .... press ENTER
   ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
   UNIT DATA are displayed .... press ENTER
   Select COMPONENT TEST .... press ENTER
   Select MAGAZINE MOTORS .... press ENTER
   Select FILM PICK UP MAGAZINE M15 .... press ENTER
   Select forward and backward

3. Exit the SERVICE PROGRAM

   Press 3 times BACKSPACE
   Select LEAVE COMPONENT TEST .... press ENTER
   Select QUIT ML300 SERVICE MODE .... press ENTER
   Select Quit the program .... press ENTER

REPLACEMENT OF FILM POCKET TORSION SPRING (SN < 2000).

Note

- **If modification 34 is installed proceed with page 2-35**
- AFTER THE TORSION SPRING IS REPLACED DO ALL THE FILM POCKET ADJUSTMENTS.

1. Switch off the ML300.

2. Take off the PANELS.

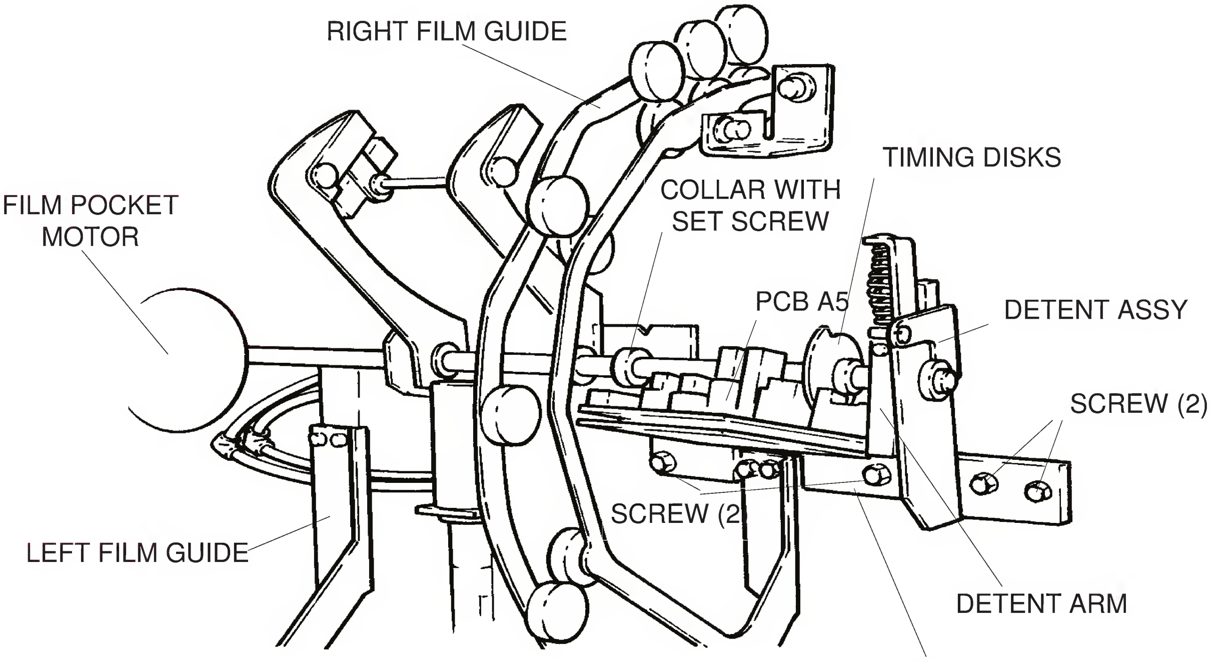

RIGHT FILM GUIDE
TIMING DISKS
COLLAR WITH SET SCREW
FILM POCKET MOTOR
PCB A5
DETENT ASSY
SCREW (2)
SCREW (2)
LEFT FILM GUIDE
DETENT ARM
MOUNTING BRACKET

figure 2-30

3. Rotate out the FILM CHUTE.

4. Take out BOARD A5 together with the MOUNTING BRACKET.

Note

Starting with SN 1422 a DOUBLE DETENT is used. See the figure on the next page.

5. Take out the DETENT ASSEMBLY.

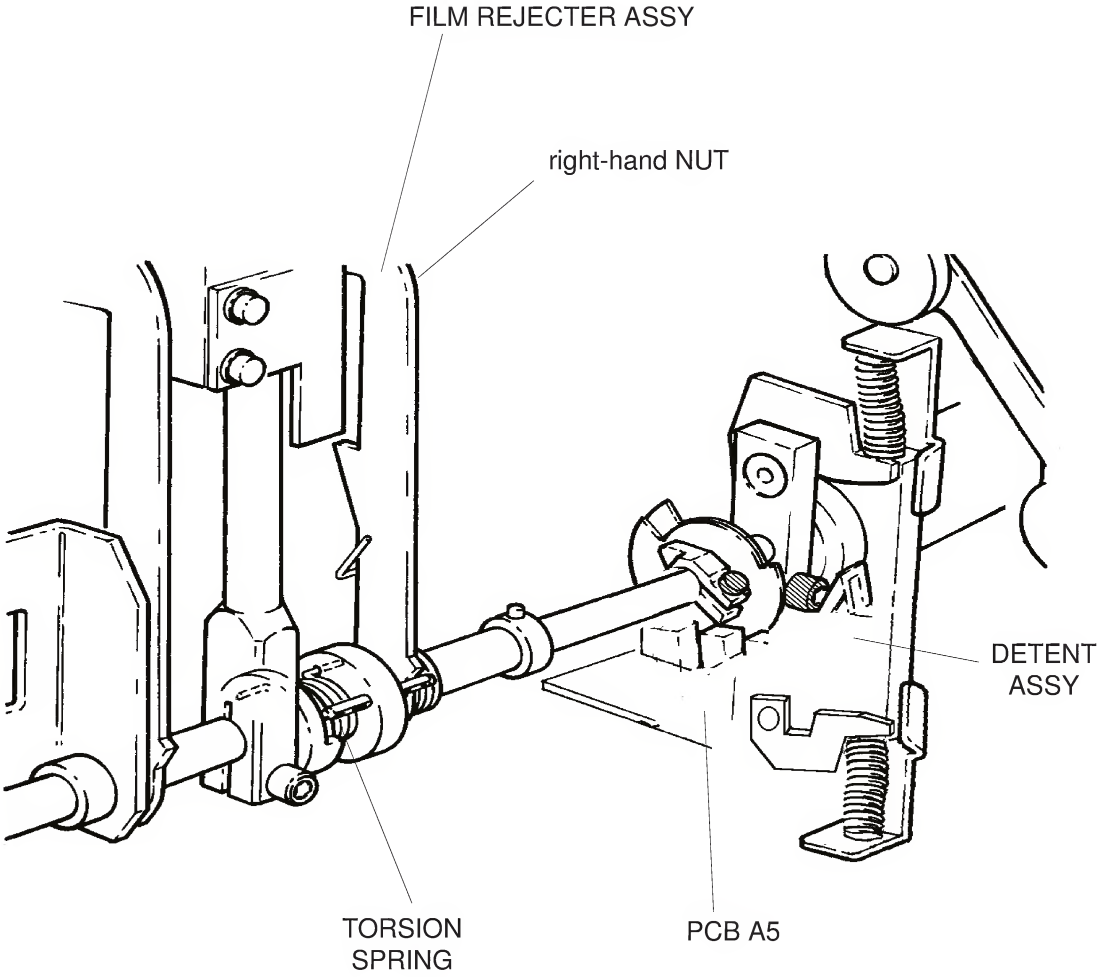

FILM REJECTER ASSY
right-hand NUT
DETENT ASSY
TORSION SPRING
PCB A5

figure 2-31

6. Take out the right FILM GUIDE.

7. Remove the right-hand NUT of the FILM REJECTER ASSEMBLY

8. Take of the TIMING DISKS.

9. Slide out the right-hand side FILM REJECTER ASSEMBLY and the CAMS with the TORSION SPRING.

Note

The TORSION SPRING is installed correctly if the FILM REJECTER ASSEMBLY rests at the rear MAGAZINE WALL after the FILM POCKET SUCKER BAR ARM is rotated in the upright (vertical) position.

10. Install the new SPRING.

11. Do the FILM POCKET ADJUSTMENTS.

FUNCTION TEST.

1. Check that small and large FILMS are picked up correctly from the magazines.

REPLACEMENT OF FILM POCKET TORSION SPRING (SN > 2000).

Note

AFTER THE TORSION SPRING IS REPLACED, NO FILM POCKET ADJUSTMENTS is required.

1. Switch off the ML300.

2. Take off the PANELS.

3. Rotate out the FILM CHUTE.

4. Loosen the SET SCREW of the COLLAR at the right-hand FILM REJECTER.

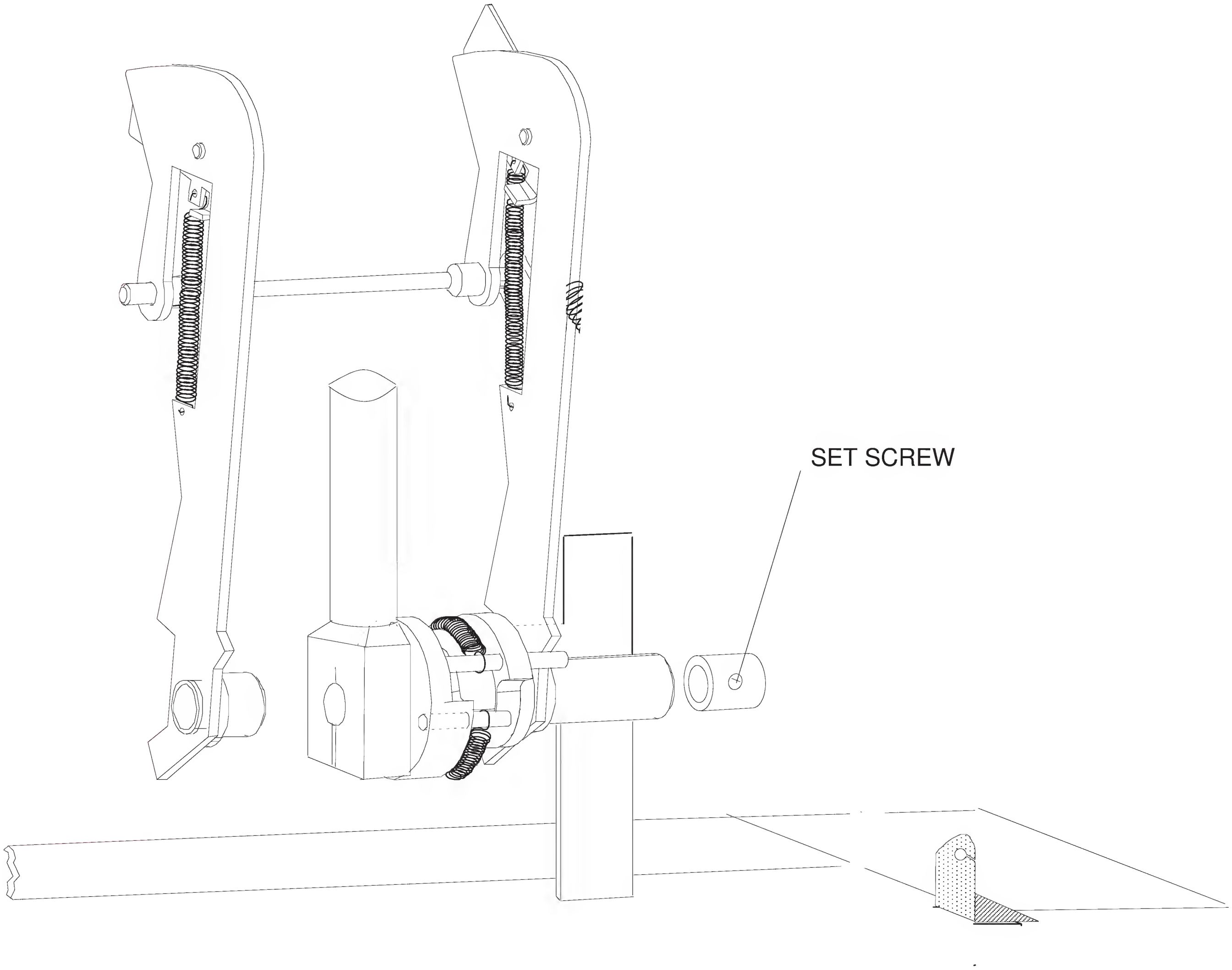


figure 2-32

5. Slide the right-hand CLUTCH DISK to the right and take out the defective CLUTCH SPRING.

6. Lubricate the RING and the right-hand CLUTCH DISK as shown to avoid wear and install the new CLUTCH DISK.

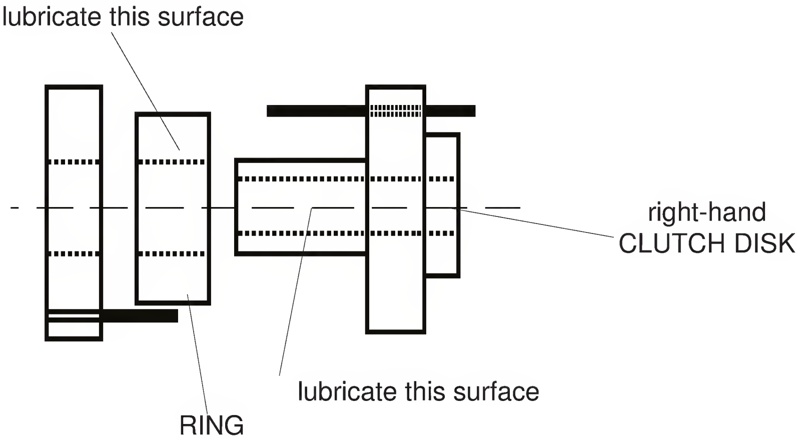

lubricate this surface
right-hand CLUTCH DISK
lubricate this surface
RING

figure 2-33

7. Slide the right-hand CLUTCH DISK, the right-hand FILM REJECTER and the COLLAR to the left. Tighten the SET SCREW.

8. Ensure that the CLUTCH SPRING is mounted as shown.

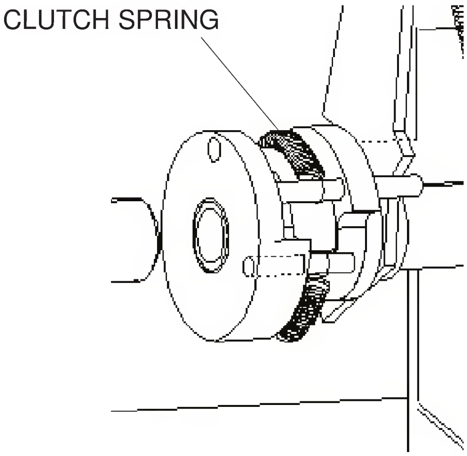

CLUTCH SPRING

figure 2-34

FUNCTION TEST.

1. Check that small and large FILMS are picked up correctly from the magazines.

REPLACEMENT OF THE FILM POCKET CLUTCH SPRING (SN > 2000)

Note

After the replacement of this SPRING no adjustment is necessary.

1. Switch off the ML300.
2. Remove the REAR PANEL.
3. Take out the 6 FILM CHUTE MOUNTING SCREWS. With SN > 3000 there is just 1 MOUNTING SCREW.

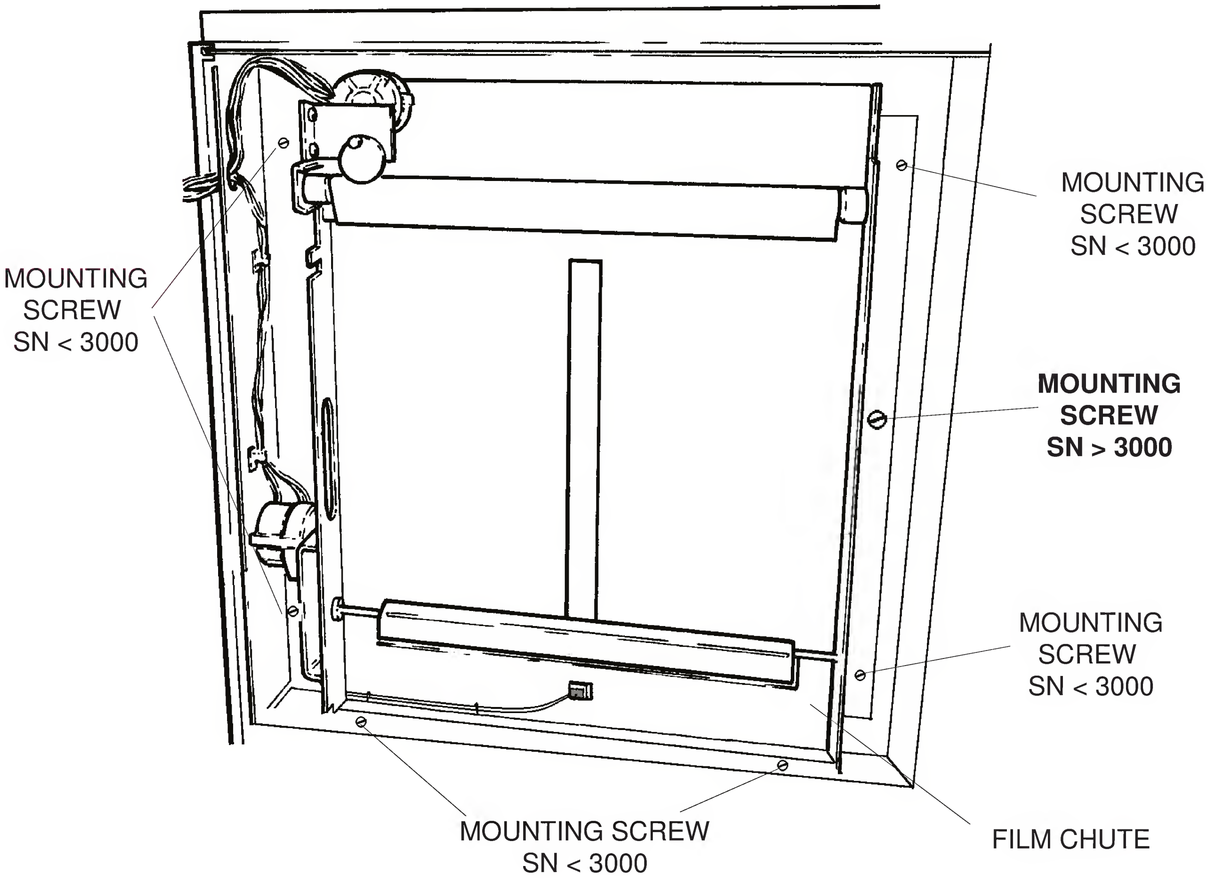

MOUNTING SCREW SN < 3000
MOUNTING SCREW SN < 3000
MOUNTING SCREW SN > 3000
MOUNTING SCREW SN < 3000
MOUNTING SCREW SN < 3000
FILM CHUTE

figure 2-35

4. Rotate out the FILM CHUTE.

5. Loosen the SET SCREW of the COLLAR and shift the COLLAR to the right.

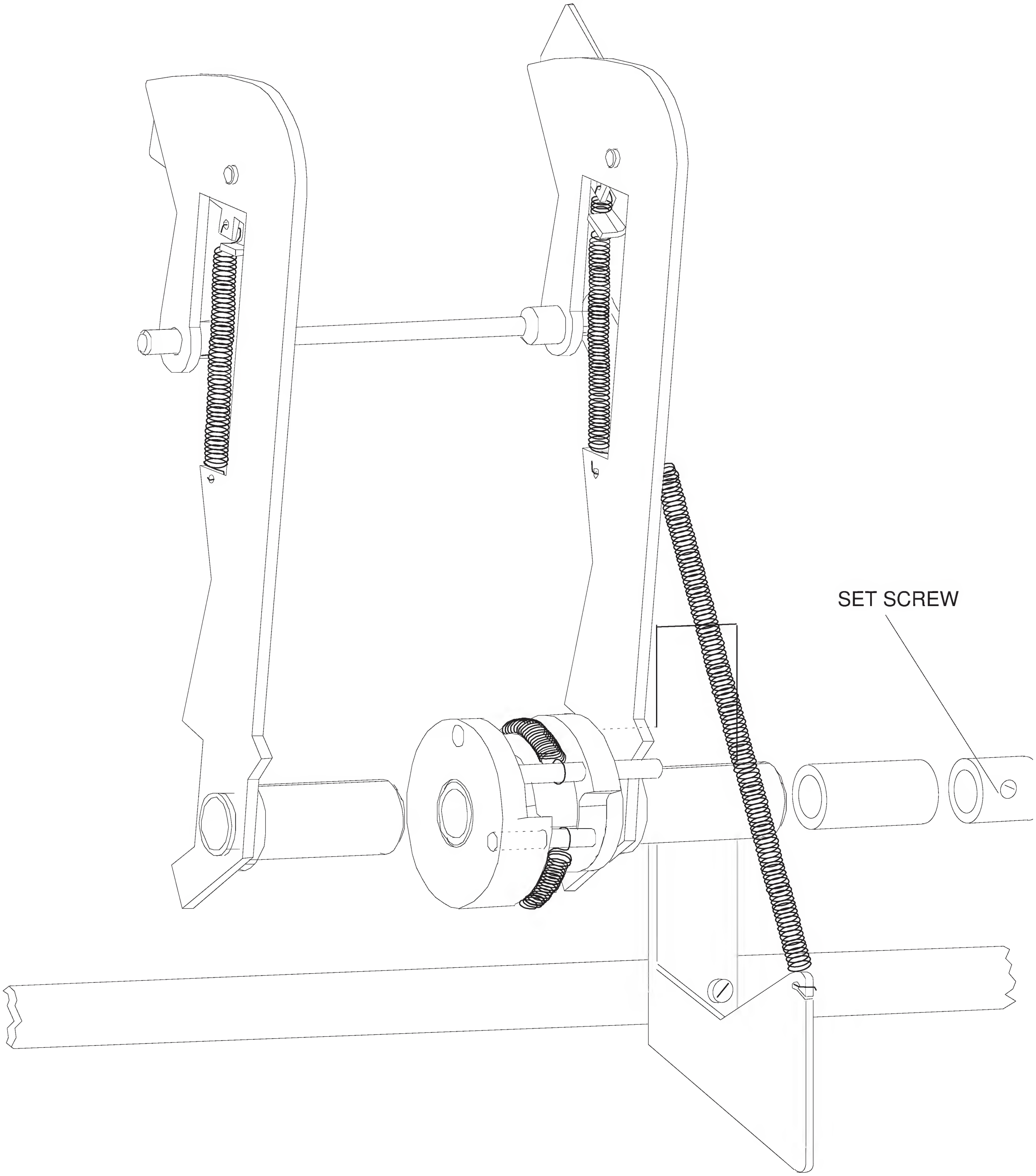


figure 2-36

Note

It is not necessary to unhook the REJECTER SPRING (SPRING between REJECTER and PCB A5).

6. Loosen the SPRING HOOK NUTS on the right-hand REJECTER, so that the REJECTER can be shifted a few millimetres to the right.

7. Shift the CLUTCH DISK 2 to the right. If necessary push the STOP PLATE a little forward. **Do not loosen the STOP PLATE. This would alter the end positions of the REJECTER.**

8. Take out the old CLUTCH SPRING.

9. Install the new SPRING.

10. Shift CLUTCH DISK 2 fully to the left. Ensure that CLUTCH DISK 1 is engaged with the FILM POCKET ARM.

11. Move the COLLAR fully to the left and tighten its SET SCREW.

12. Tighten the SPRING HOOK NUTS on the right-hand REJECTER.

13. Rotate in the FILM CHUTE and fix it with the 6 MOUNTING SCREWS (or 1 for SN > 3000) from step 3.

14. Mount the REAR PANEL

FUNCTION TEST

1. Switch on the ML300.

2. Run a few cycles with different film sizes to check for correct operation.

REPLACEMENT OF THE FILM REJECTER SPRING

1. Switch off the ML300.

2. Remove the REAR PANEL.

3. Take out the 6 FILM CHUTE MOUNTING SCREWS. With SN > 3000 there is just 1 MOUNTING SCREW.

4. Rotate out the FILM CHUTE.

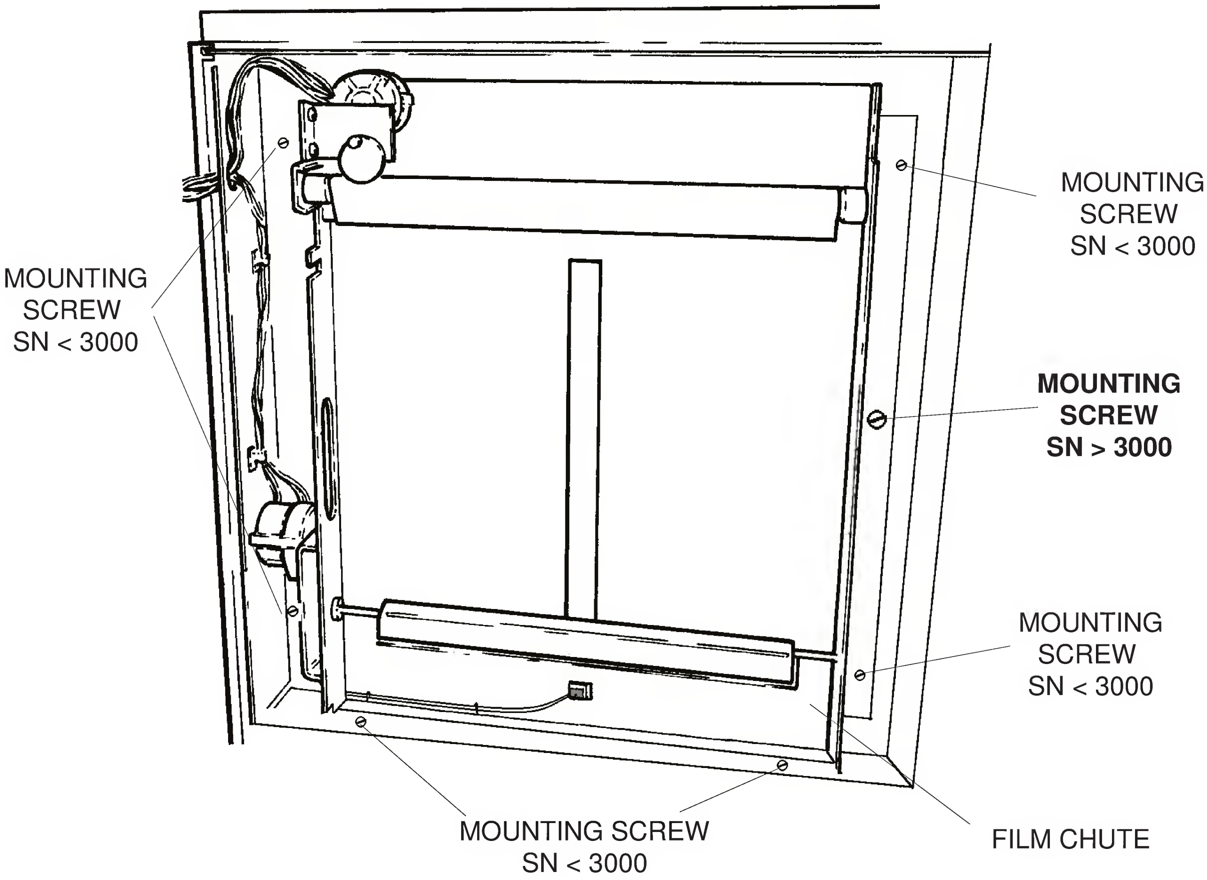

MOUNTING
SCREW
SN < 3000
MOUNTING
SCREW
SN < 3000
MOUNTING
SCREW
SN > 3000
MOUNTING
SCREW
SN < 3000
MOUNTING SCREW
SN < 3000
FILM CHUTE

figure 2-37

5. Unhook the old REJECTER SPRING.

6. Install the new REJECTER SPRING.

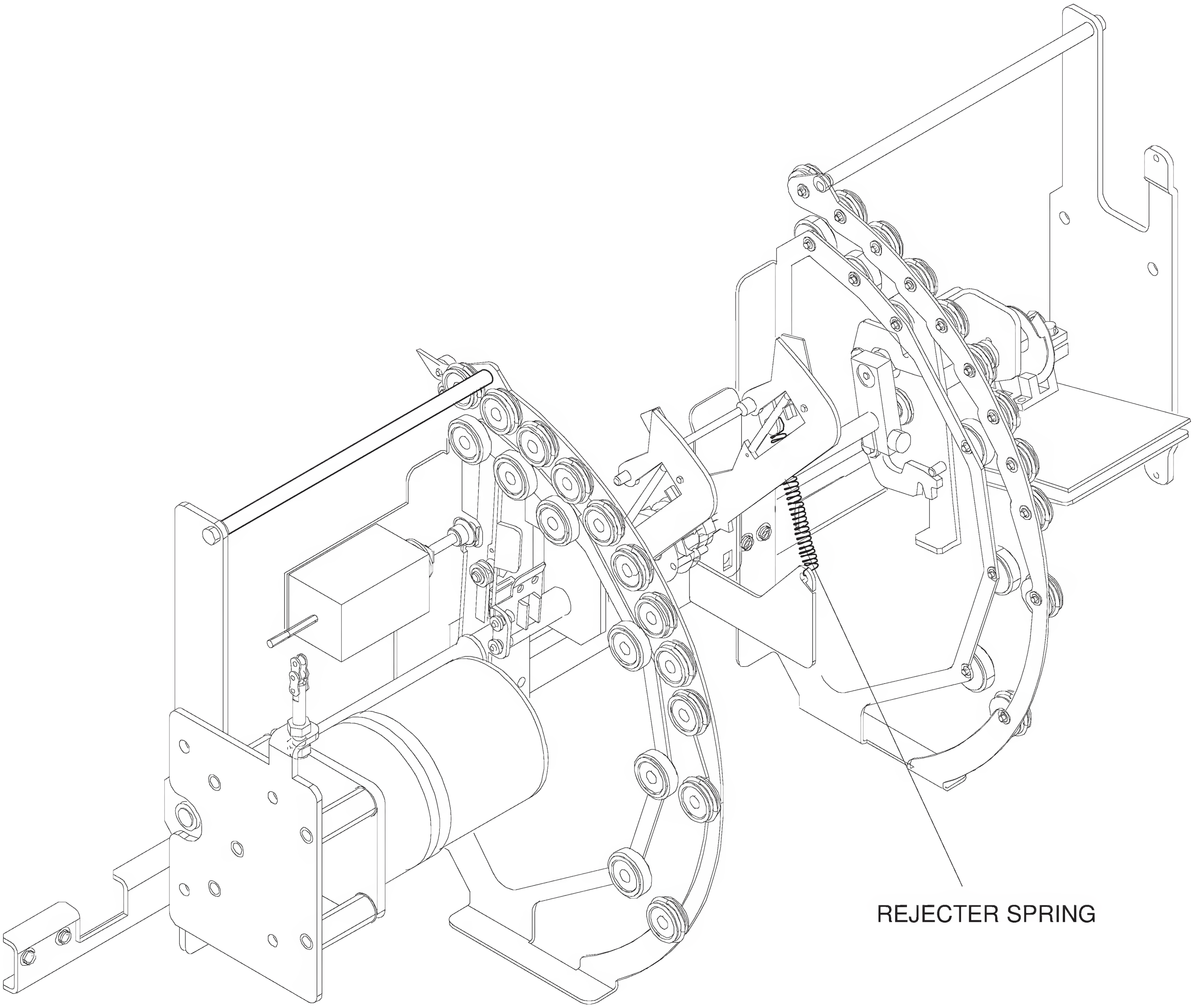

REJECTER SPRING

figure 2-38

7. Manually rotate in and out the FILM POCKET SUCKER BAR ARM and check that the REJECTER moves correctly forward and backward.

8. Rotate in the FILM CHUTE and fix it with the 6 MOUNTING SCREWS (or 1 for SN > 3000) from step 3.

9. Mount the REAR PANEL.

PROCESSOR INTERFACE

REPLACEMENT OF PROCESSOR INTERFACE MOTOR M13

1. Switch off the ML300.

2. Take off the PANELS.

3. Take off the MOTOR CONNECTOR on BOARD A5 X25.

4. Take out the INTERFACE ASSEMBLY.

5. Take off the DRIVE BELT.

6. Take off the MOTOR MOUNTING SCREWS.

7. Install the new MOTOR.

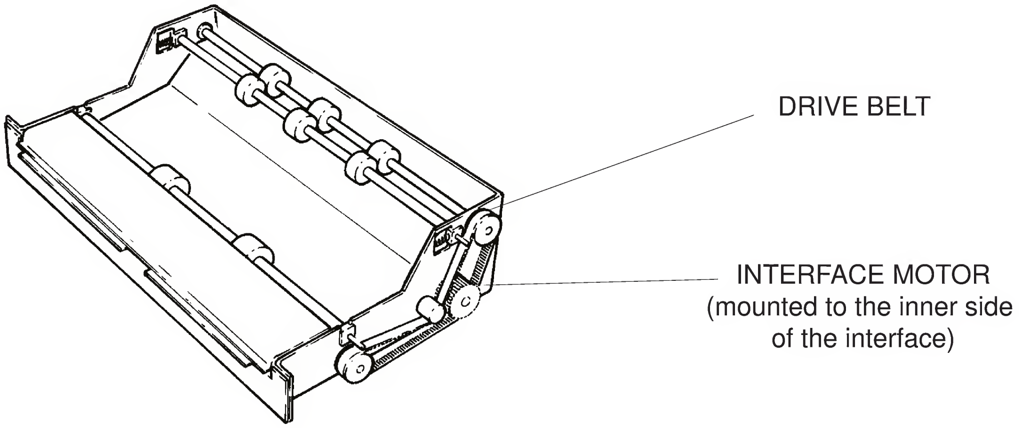

DRIVE BELT
INTERFACE MOTOR (mounted to the inner side of the interface)

figure 2-39

FUNCTION TEST.

1. Check that the PROCESSOR INTERFACE MOTOR is running.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST .... press ENTER
Select INTERFACE/FILM MOT .... press ENTER
Select MAGAZINE ROLLER MOTOR M13 .... press ENTER
Select ON/OFF

2. Exit the SERVICE PROGRAM

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER.

PROCESSOR INTERFACE CLUTCHES

There are 2 free running ONE_WAY CLUTCHES in the PROCESSOR INTERFACE PULLEYS. If you pull a FILM through the PROCESSOR INTERFACE in direction of the PROCESSOR the toothed BELT must not move. If it moves as you pull, one of the free running ONE-WAY CLUTCHES is assembled wrong.

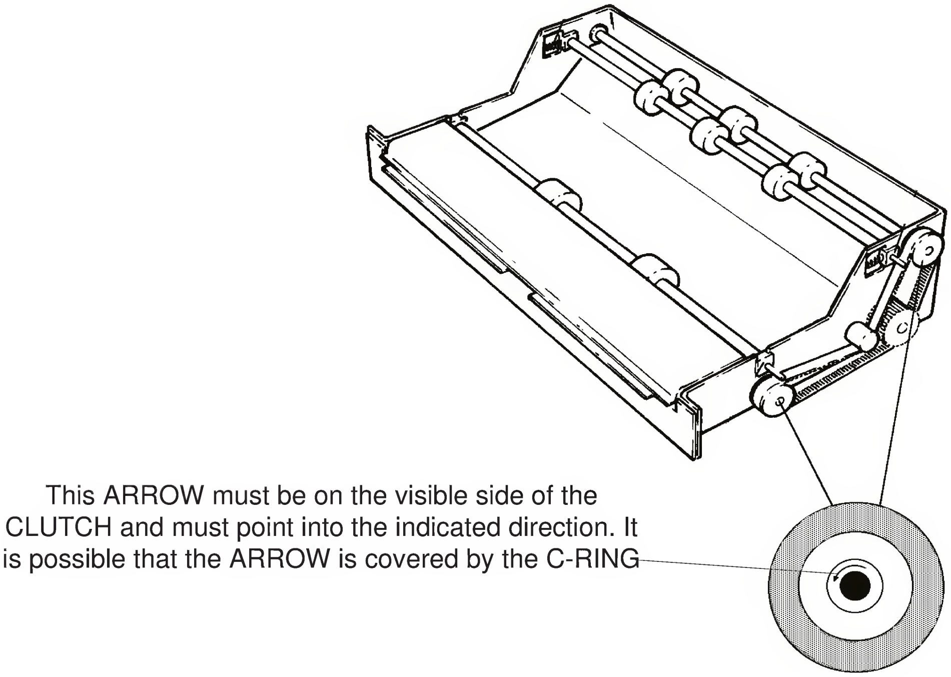

This ARROW must be on the visible side of the CLUTCH and must point into the indicated direction. It is possible that the ARROW is covered by the C-RING

figure 2-40

CONVEYOR

REMOVAL OF THE CONVEYOR

1. Switch off the ML300.

2. Take off the PANELS.

3. Disconnect CONNECTOR X55 and CONNECTOR X60.

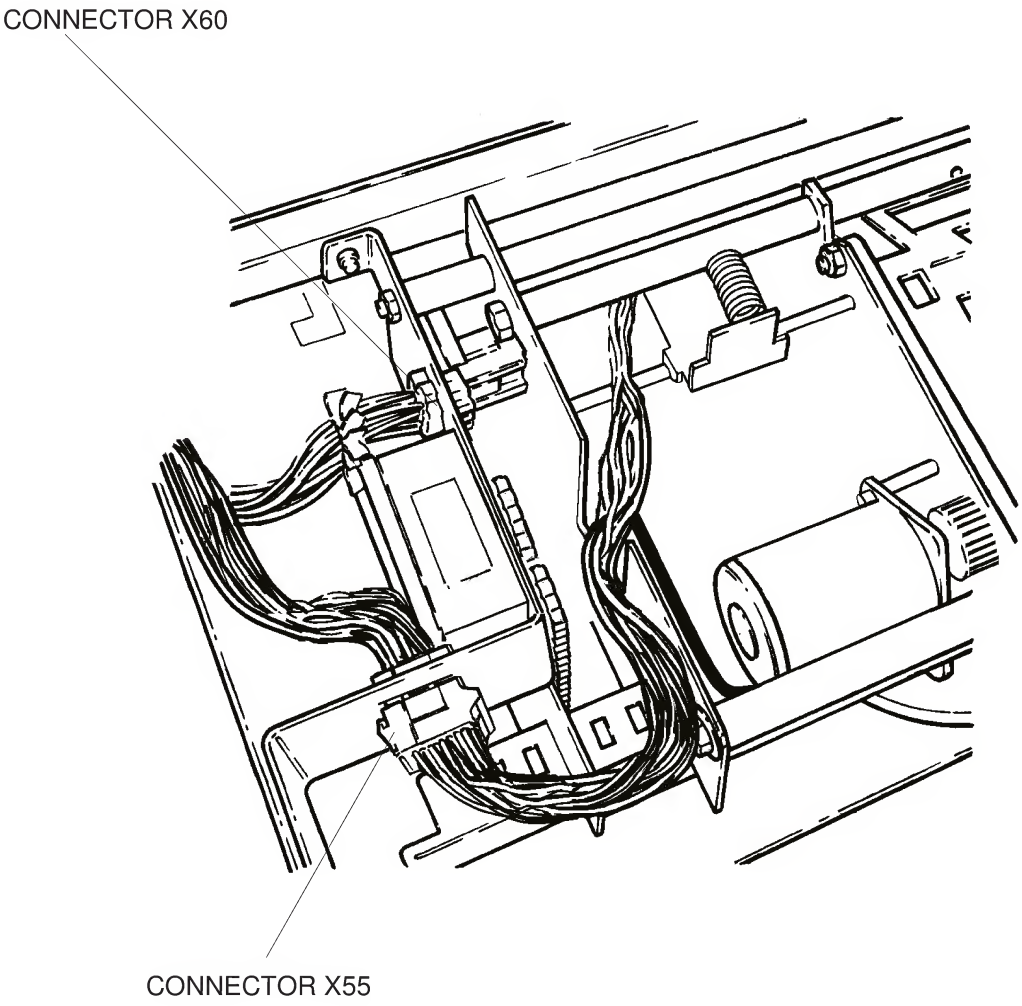

CONNECTOR X60
CONNECTOR X55

figure 41

4. Cut the WIRE TIE and mark the position of it.

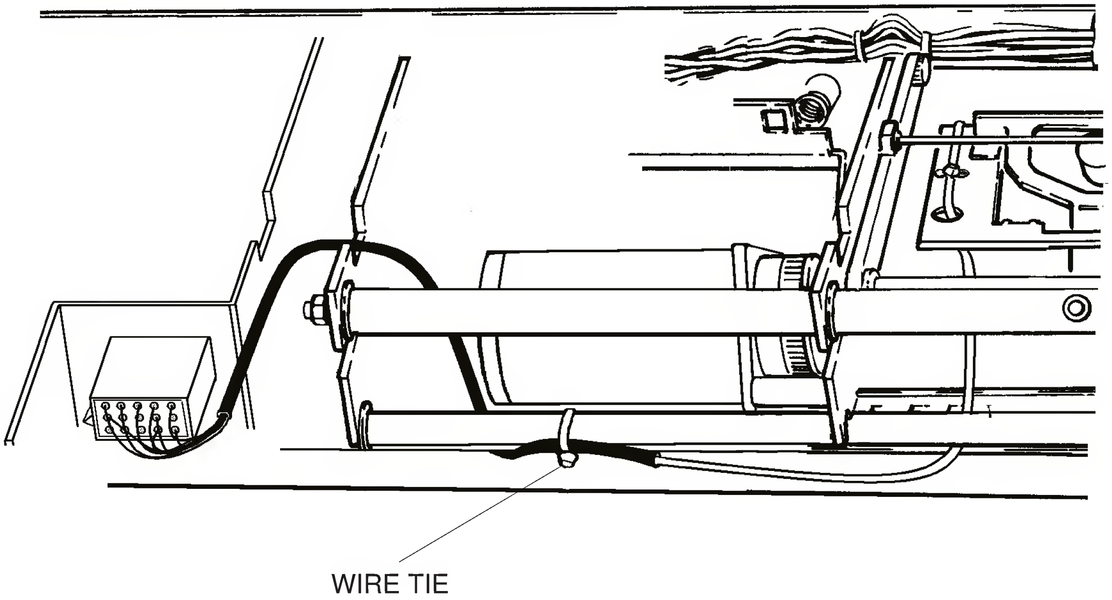


figure 2-42

5. Disconnect the HOSE and carefully pull it out off the CABLE DUCT.

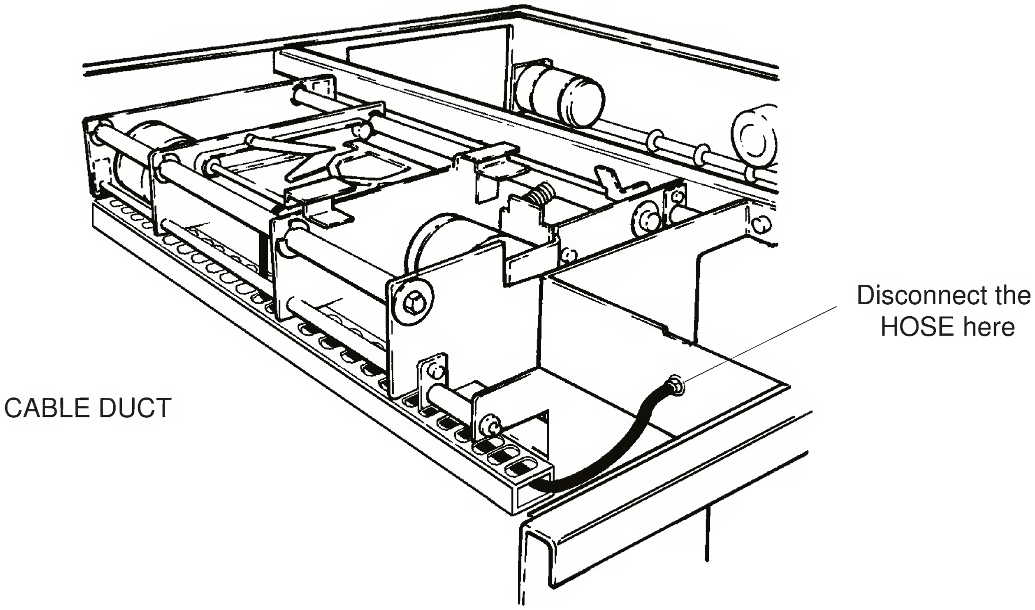

Disconnect the
HOSE here
CABLE DUCT

figure 2-43

6. Remove the SCREWS from each of the RETAINERS on each side of the CONVEYOR.

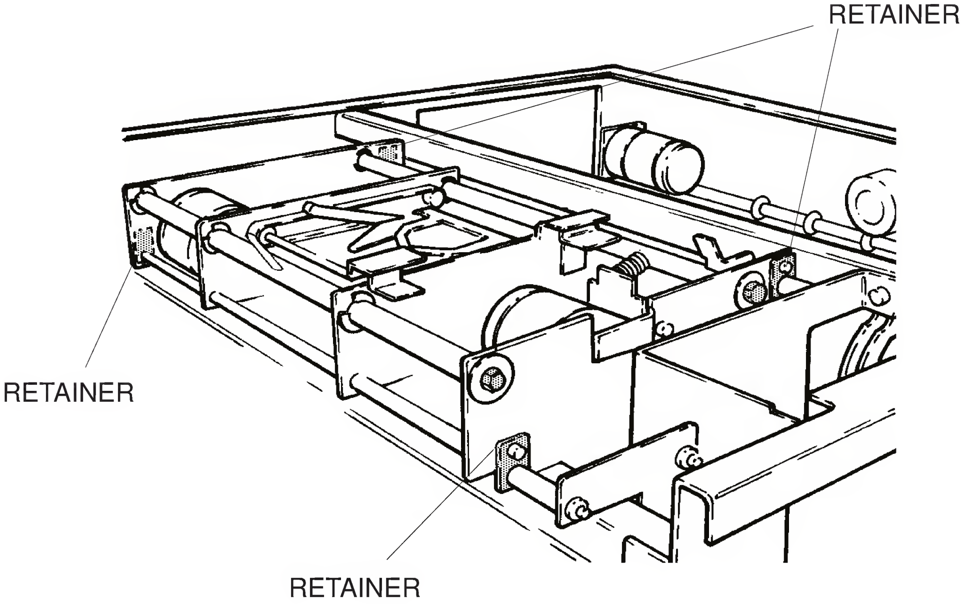

RETAINER
RETAINER
RETAINER

figure 2-44

7. Take off the 2 SUPPORTS.

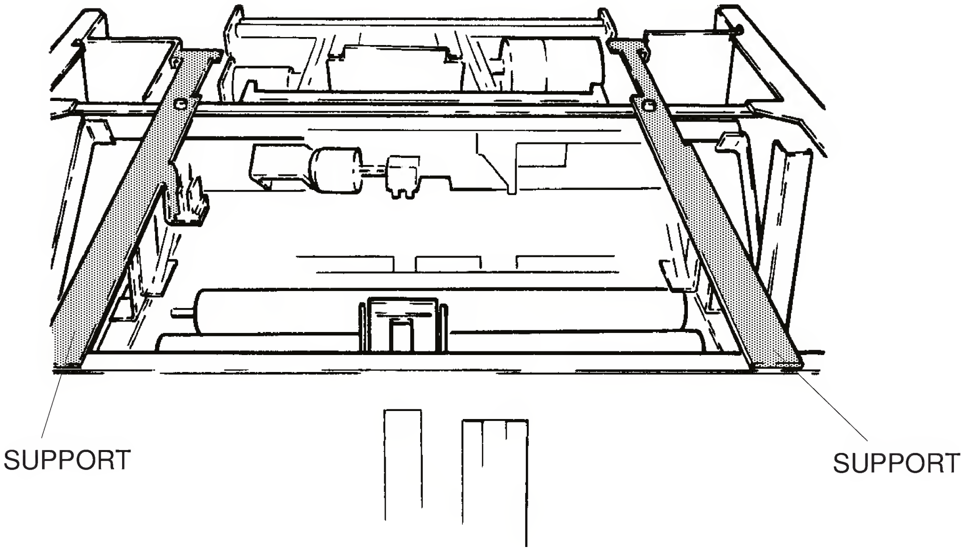

SUPPORT
SUPPORT

figure 2-45

8. Lift out the CONVEYOR.

FUNCTION TEST

1. Check that the CONVEYOR is seated properly. It must be as far as possible to the front (e.g. to the INPUT FLAP).
2. Check that the HOSE is connected again and that it is routed through the CABLE DUCT.
3. Check that the HARNESS is fixed with a WIRE TIE at the correct place. Use the mark from step 4 as reference.
4. Check that CONNECTORS X55 and X60 are seated properly.
5. Run TEST CYCLES with different film sizes and check that the FILM is picked up from the CASSETTE.
6. Check that the FILM is transported correctly into the FILM CHUTE.

DISASSEMBLY OF THE CONVEYOR

Disassembly of the CONVEYOR is needed for removing the following:

- DRIVE SHAFTS
- CARRIAGE ASSEMBLY
- DRIVE BELTS

1. Do PROCEDURE “REMOVAL OF CONVEYOR”.
2. Cut the WIRE TIES along the upper TIERODS. Mark the position of the WIRE TIES. See the top drawing on the next page.
3. Take out the 4 NUTS at the TIERODS.
4. Remove the 12 C-RINGS from the upper 2 TIERODS.
5. Remove the CARRIAGE STOP.
6. Slide out both upper TIERODS.

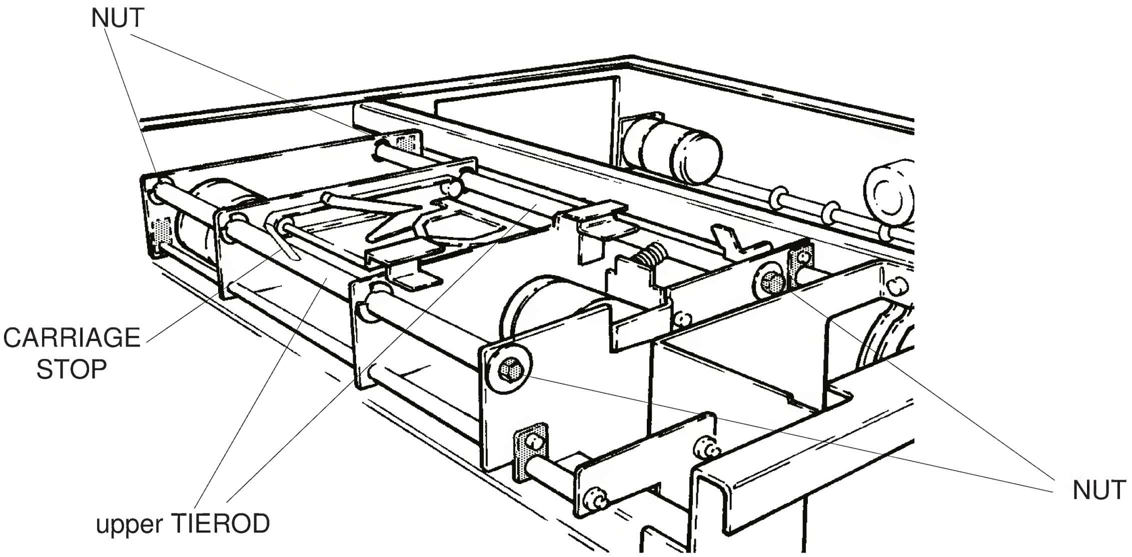

NUT
CARRIAGE STOP
upper TIEROD
NUT

figure 2-46

7. Take out C-RINGS at both PRESSURE ROLLER SHAFTS and slide SHAFTS outwards.

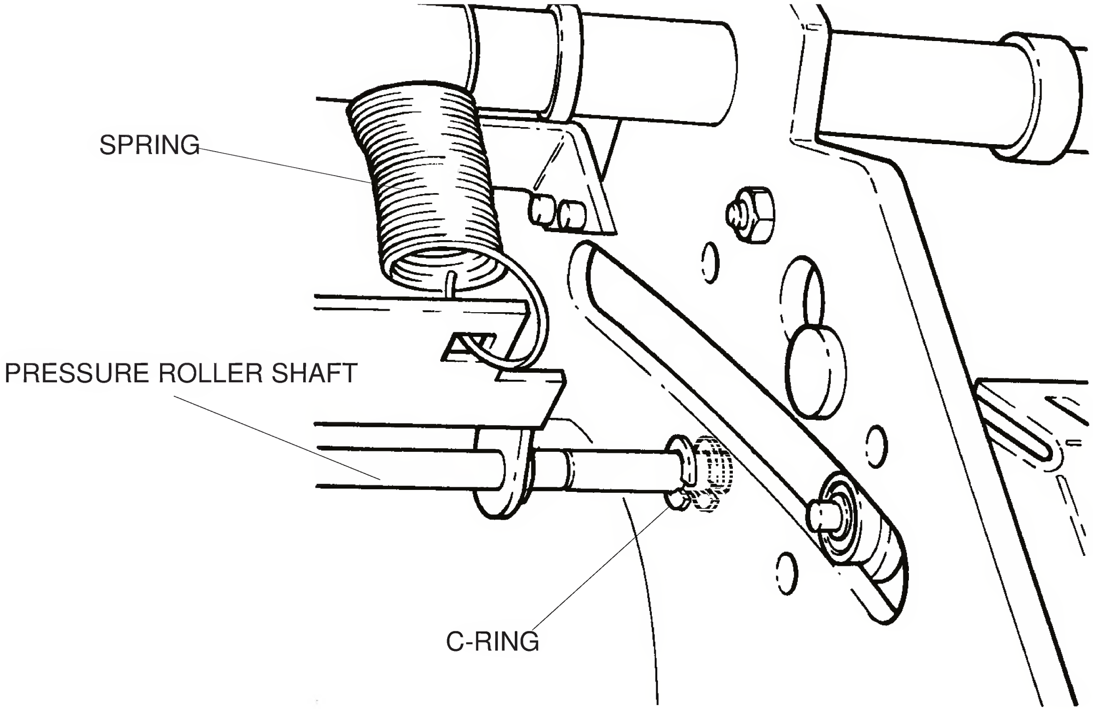

SPRING
PRESSURE ROLLER SHAFT
C-RING

figure 2-47

8. Take out SPRINGS.

9. Disconnect the VACUUM SOLENOID CONNECTOR.

10. Disconnect the GROUND WIRE at the ROLLER MOTOR.

11. Disconnect the CONNECTORS of both CARRIAGE POSITION SENSORS.

12. Disconnect the CONNECTOR of the SENSOR VACUUM OFF.

Note

Do not lose the SPACER of the PRESSURE ROLLER SHAFT located on the ROLLER MOTOR side.

13. Carefully lift out the CARRIAGE ASSEMBLY.

FUNCTION TEST

1. Check that the WIRE TIES are at the correct position. Use the marks from step 4 as reference.

2. Check that the CONVEYOR is seated properly. It must be as far as possible to the front (e.g. to the INPUT FLAP).

3. Run a TEST CYCLE.

4. Check that the FILM is picked up from the CASSETTE.

5. Check that the FILM is transported correctly into the FILM CHUTE.

6. Use various FILM SIZES.

REPLACEMENT OF THE FILM PICK UP MOTOR BELT (CARRIAGE)

1. Do Procedure “REMOVAL OF CONVEYOR”.

2. Remove the 3 MOUNTING SCREWS of the FILM PICK UP MOTOR.

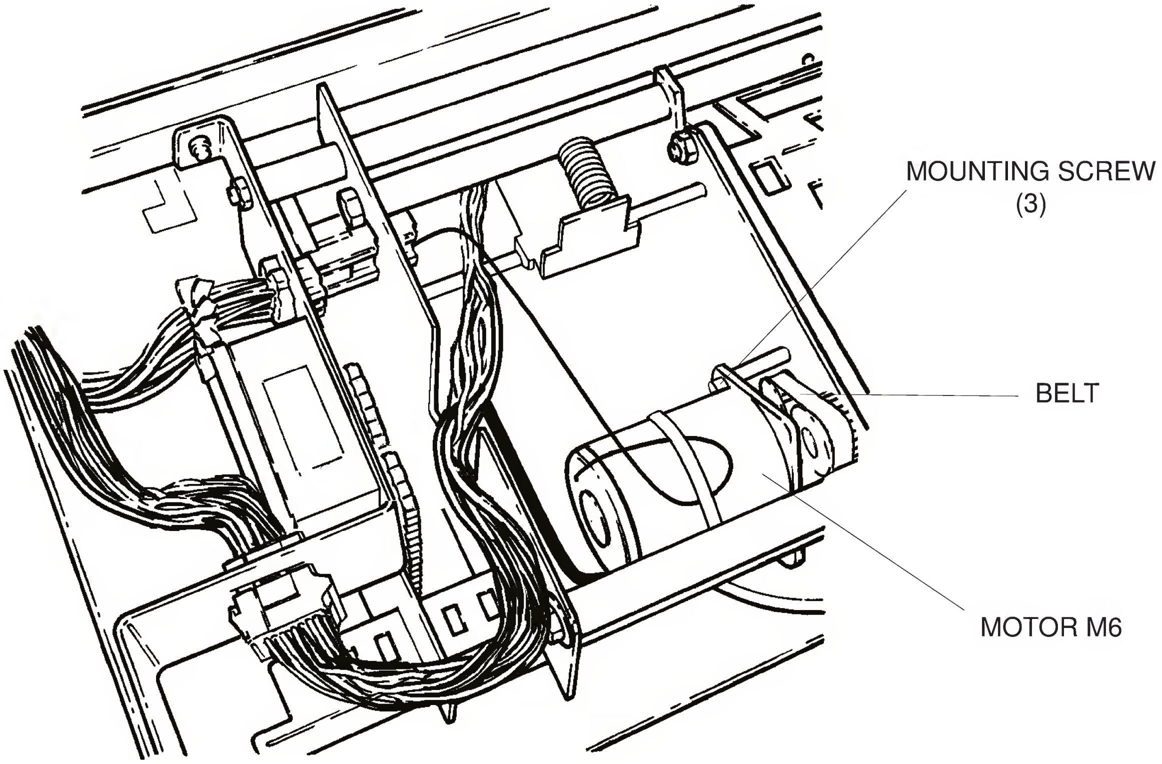


figure 2-48

3. Replace the BELT with a new one.

FUNCTION TEST

1. Check that the CONVEYOR is seated properly. It must be as far as possible to the front (e.g. to the INPUT FLAP).

2. Run a TEST CYCLE.

3. Check that the FILM is picked up from the CASSETTE.

4. Check that the FILM is transported correctly into the FILM CHUTE.

5. Use various FILM SIZES.

REPLACEMENT OF FILM PICK UP MOTOR (CARRIAGE) M6

1. Do PROCEDURE "REMOVAL OF CONVEYOR".
2. Remove the 3 MOUNTING SCREWS.
3. Take out the 3 MOTOR WIRES from the CONNECTOR X60. Extraction Tool TL1580.

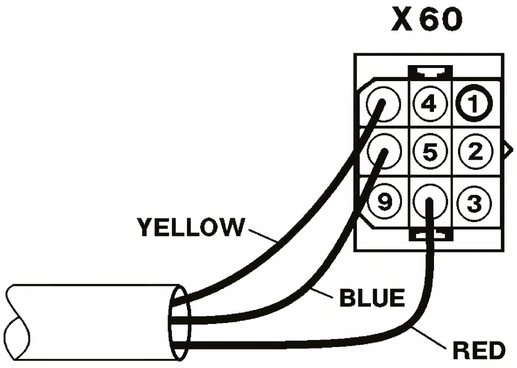

X60
4
1
5
2
9
3
YELLOW
BLUE
RED

figure 2-49

4. Take out the MOTOR.

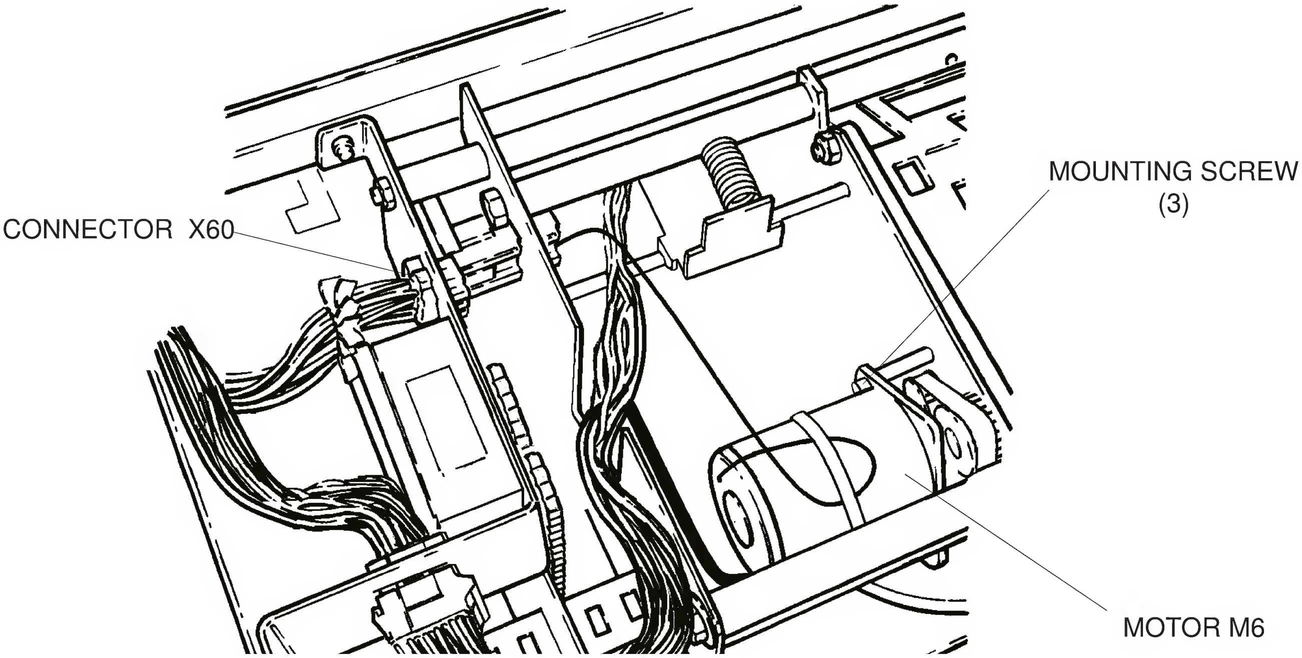

CONNECTOR X60
MOUNTING SCREW
(3)
MOTOR M6

figure 2-50

5. Install the new MOTOR.

FUNCTION TEST

1. Check that the FILM PICK UP MOTOR M6 is running.

   Start the SERVICE PROGRAM
   Select SERVICE MODE from the GLOBAL MENU .... press ENTER
   ENTER SERVICE MODE MESSAGE IS DISPLAYED .... press ENTER
   UNIT DATA are displayed .... press ENTER
   Select COMPONENT TEST .... press ENTER
   Select CASSETTE MOTORS .... press ENTER
   Select FILM PICK UP M6 .... press ENTER
   Select forward .... press ENTER
   Select backward .... press ENTER

2. Exit the SERVICE PROGRAM

   Press 3 times BACKSPACE
   Select LEAVE COMPONENT TEST .... press ENTER
   Select Quit ML300 SERVICE MODE .... press ENTER
   Select Quit the program .... press ENTER.

REPLACEMENT OF CARRIAGE ASSEMBLY DRIVE BELTS

Note

Replace both Drive Belts at the same time.

1. Do PROCEDURE “REMOVAL OF CONVEYOR”.
2. Do PROCEDURE “REPLACEMENT OF FILM PICK UP MOTOR” step 1 to 3.
3. Mark the position of the BELT-LINKS on the MECHANISM PLATES. These marks are used as a reference when installing the new DRIVE BELTS.
4. Remove the IDLER ROLLERS.
5. Remove the small C-RINGS at the BELT LINKS.
6. Slide the GEAR to the right and remove the DOWEL PIN.
7. Slide the FILM PICK UP DRIVE SHAFT to the left.

Note

A CARRIAGE JAM OCCURS IF THE BELT LINKS ARE NOT ALIGNED WITH THE REFERENCE MARKS FROM STEP 3.

8. Replace the BELTS.

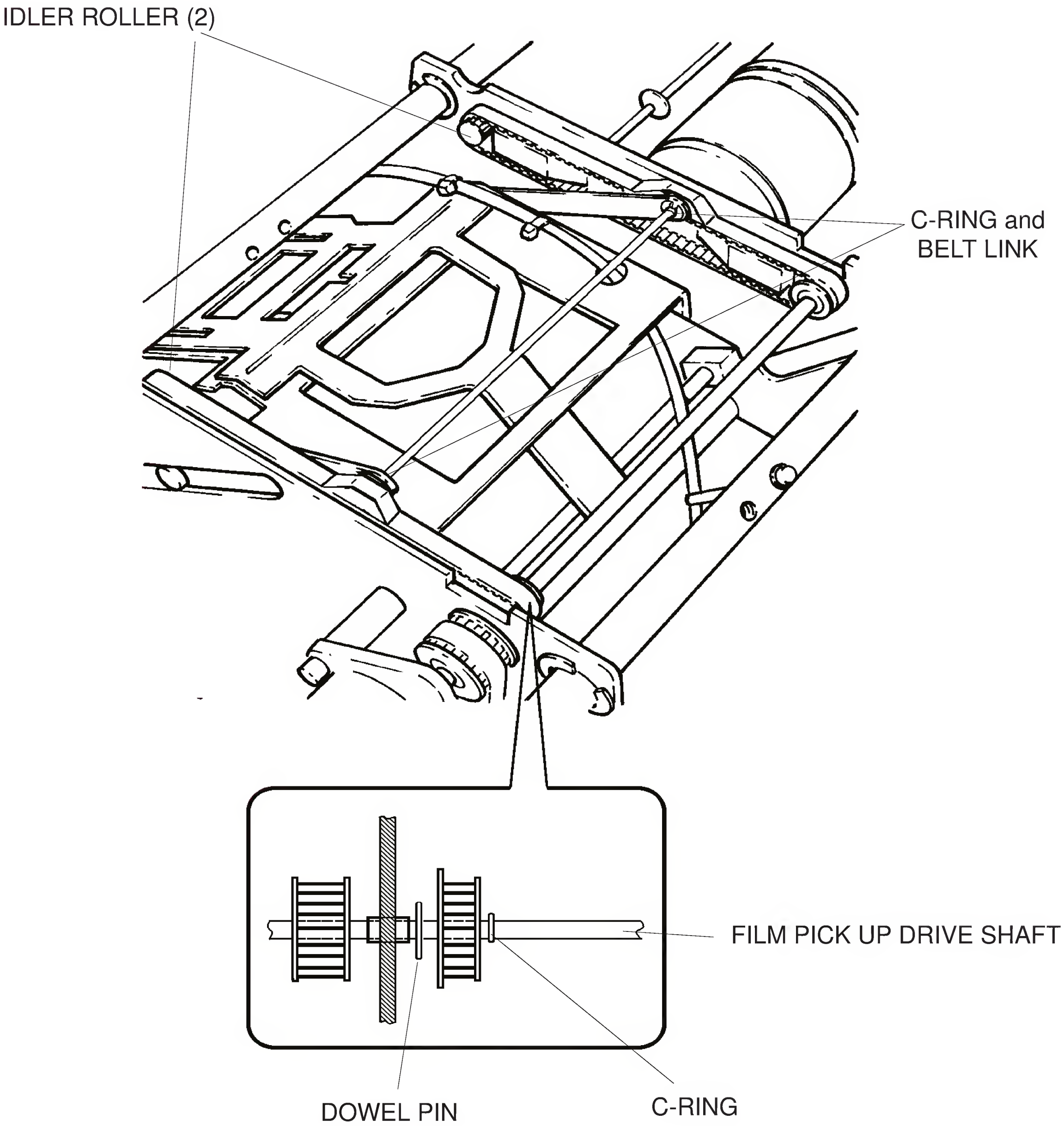

IDLER ROLLER (2)
C-RING and BELT LINK
FILM PICK UP DRIVE SHAFT
DOWEL PIN
C-RING

figure 2-51

FUNCTION TEST

1. Check that the CONVEYOR is seated properly. It must be as far as possible to the front (e.g. to the INPUT FLAP).
2. Run a TEST CYCLE.
3. Check that the FILM is picked up from the CASSETTE.
4. Check that the CASSETTE SUCKER BAR CARRIAGE moves freely forward and backward.
5. Check that the FILM is transported correctly into the FILM CHUTE.
6. Use various FILM SIZES.

REPLACEMENT OF SOLENOID CASSETTE SUCKER BAR TILTING Y7

1. Do PROCEDURE “REMOVAL OF CONVEYOR”.
2. Put CARRIAGE ASSEMBLY upside down.
3. Pull CASSETTE SUCKER BAR carefully forward to get access to the SOLENOID CASSETTE SUCKER BAR TILTING Y7.

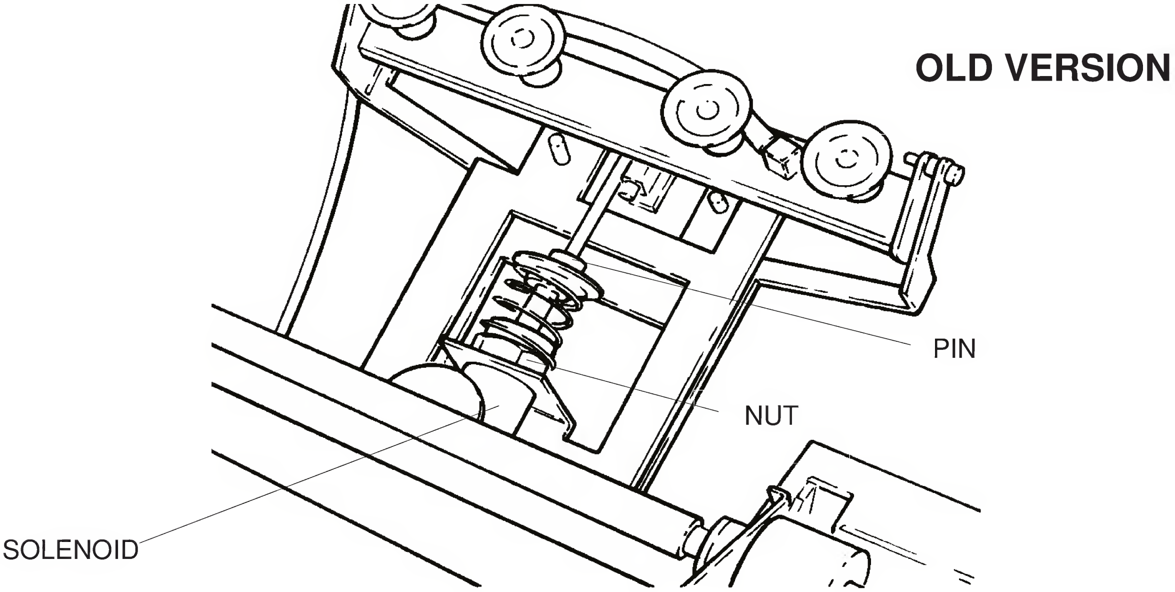


figure 2-52

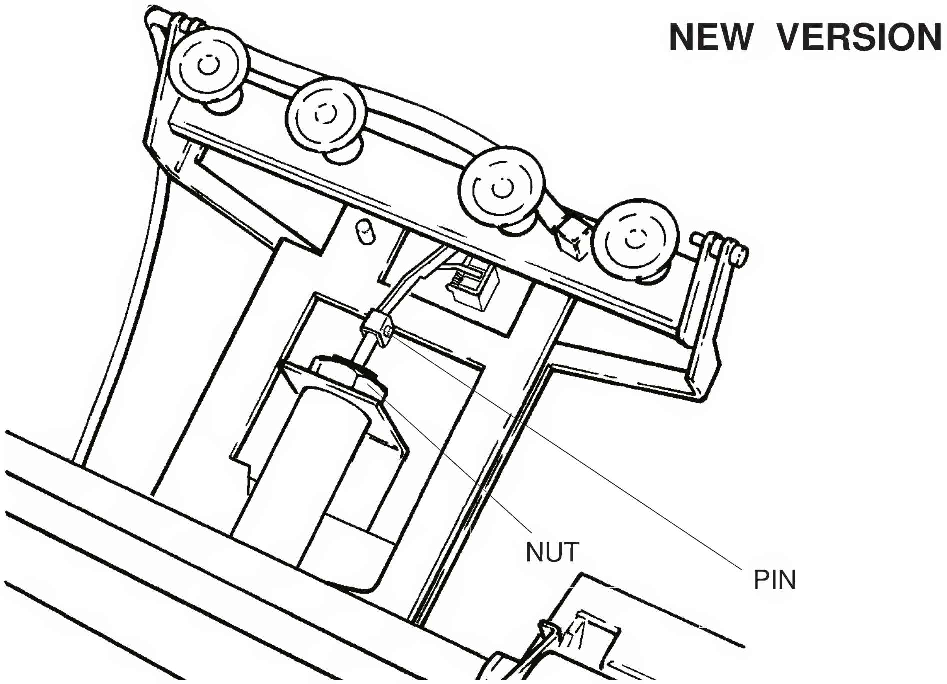


figure 2-53

4. Remove the PIN to disconnect the ARMATURE from the ACTUATOR.

5. Undo the NUT.

6. Cut the WIRE TIES.

7. Replace the SOLENOID.

FUNCTION TEST

1. Check that the SOLENOID CASSETTE SUCKER BAR TILTING Y7 tilts the CASSETTE SUCKER BAR.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST .... press ENTER
Select SOLENOIDS .... press ENTER
Select SOLENOID ON .... press ENTER
Select SOLENOID OFF .... press ENTER

2. Exit the SERVICE PROGRAM

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER.

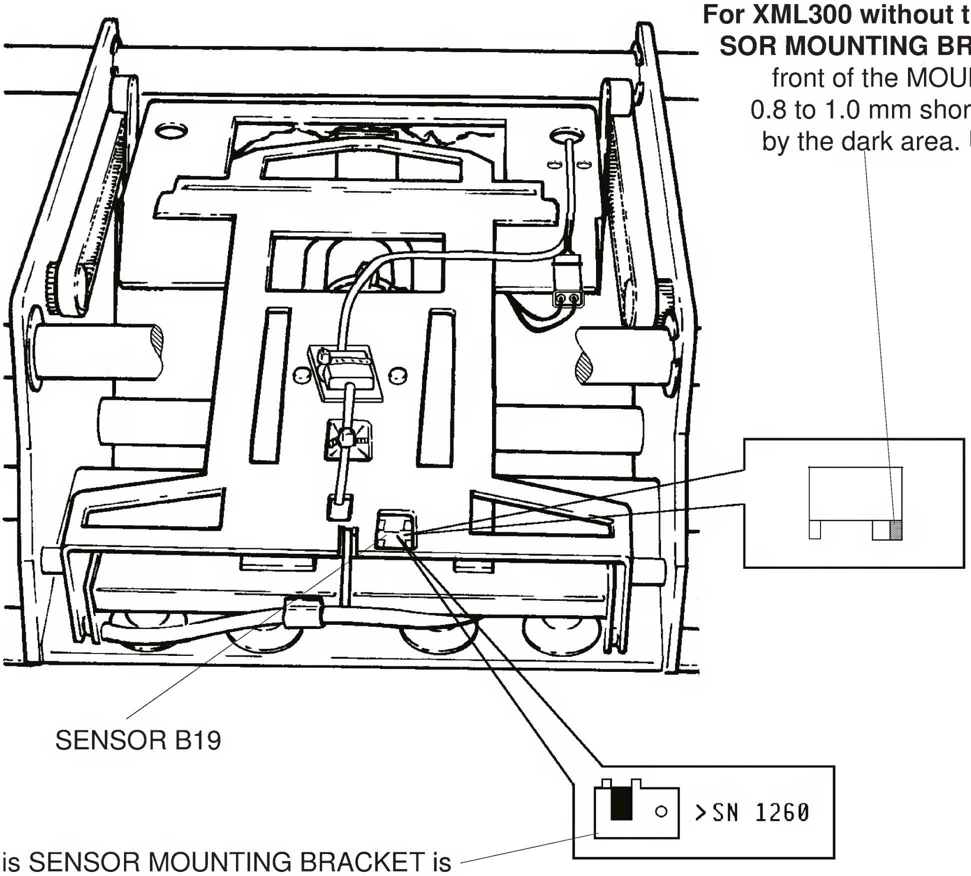
REPLACEMENT OF THE SENSOR SUCKER BAR TILT B19

1. Switch off the ML300.

2. Take off the TOP COVER, the REAR and the RIGHT-HAND PANEL.

3. Manually move the CASSETTE SUCKER BAR to the front.

4. Take out SENSOR B19. Mark the position of the WIRE TIES.



For XML300 without the additional SENSOR MOUNTING BRACKET. Make the front of the MOUNTING CLIPS 0.8 to 1.0 mm shorter, as indicated by the dark area. Use a file for it.

SENSOR B19

This SENSOR MOUNTING BRACKET is used in XML300 with SN > 1260

figure 2-54

5. If you have a XML300 without the additional SENSOR MOUNTING BRACKET proceed with step 6. Otherwise proceed with step 9.

6. Make the front of the SENSOR MOUNTING CLIPS (B19) 0.8 to 1mm smaller and mount it into the CARRIAGE ASSEMBLY. See the drawing on the previous page.

7. Move the SENSOR B19 forward in direction of the CASSETTE as far as possible and fix it in this position with glue.

8. Proceed with step 10.

9. Install the new SENSOR into the SENSOR MOUNTING BRACKET.

10. Fix the harness with WIRE TIES. Use the marks from step 4 as reference.

FUNCTION TEST

1. Switch on the ML300.

2. Test the function of SENSOR B19 with the SENSOR TEST.
   Start the SERVICE PROGRAM.
   Select SERVICE MODE from the GLOBAL MENU .... press ENTER
   ENTER SERVICE MODE MESSAGE is displayed... press ENTER
   UNIT DATA are displayed .... press ENTER
   Select COMPONENT TEST .... press ENTER
   Select SENSORS.. press ENTER
   Select WITH/WITHOUT SOUND .... press ENTER

3. Manually tilt the CASSETTE SUCKER BAR. B19 must now be indicated ON.

4. Exit the SERVICE PROGRAM.
   Press 3 time BACKSPACE
   Select LEAVE COMPONENT TEST .... press ENTER
   Select QUIT ML300 SERVICE MODE... press ENTER
   Select Quit the program .... press ENTER.

3. ADJUSTMENTS

INTRODUCTION

In this section it is very often explained how to use the CES SERVICE SOFTWARE. The first line tells always what should be performed. In the next lines it is explained how to reach this goal. These additional explanations are printed *italic* and can be skipped if you are experienced with the CES SERVICE SOFTWARE.

EXAMPLE:

1. Start the CASSETTE INPUT FLAP MOTOR M1

Start the SERVICE PROGRAM.
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select CASSETTE MOTORS .... press ENTER
Select INPUT FLAP MOT M1 .... press ENTER
Select CLOSE/OPEN .... press ENTER

SENSORS and DAYLIGHT

The SENSORS are sensitive to daylight and to room light. This can result in wrong measurements when you do an adjustment, or a SENSOR becomes triggered and the ML300 tries to bring the various units to HOME POSITION. For this reason dim the light or cover the SENSORS when you do the adjustments. This is especially important when you measure the output voltage of a SENSOR.

FRAME LEVELLING

PURPOSE:

This adjustment makes sure, the PROCESSOR will roll out smoothly. If the FRAME is not levelled it may be possible that the MAGAZINE SUCKER BAR is no longer parallel to the MAGAZINES. This may result in FILM PICKUP problems. Also it is possible that a MAGAZINE stays open.

1. Take out all MAGAZINES.

Note

The old style FILM CHUTE has always to be fixed with 4 SCREWS. The new style FILM CHUTE is only fixed with one SCREW and can be rotated out.

2. Make sure that the FILM CHUTE is in the correct place and that it is fixed with all 4 MOUNTING SCREWS to the FRAME.

3. Place the LEVEL onto the BASE PLATE of the MAGAZINE CHAMBER.

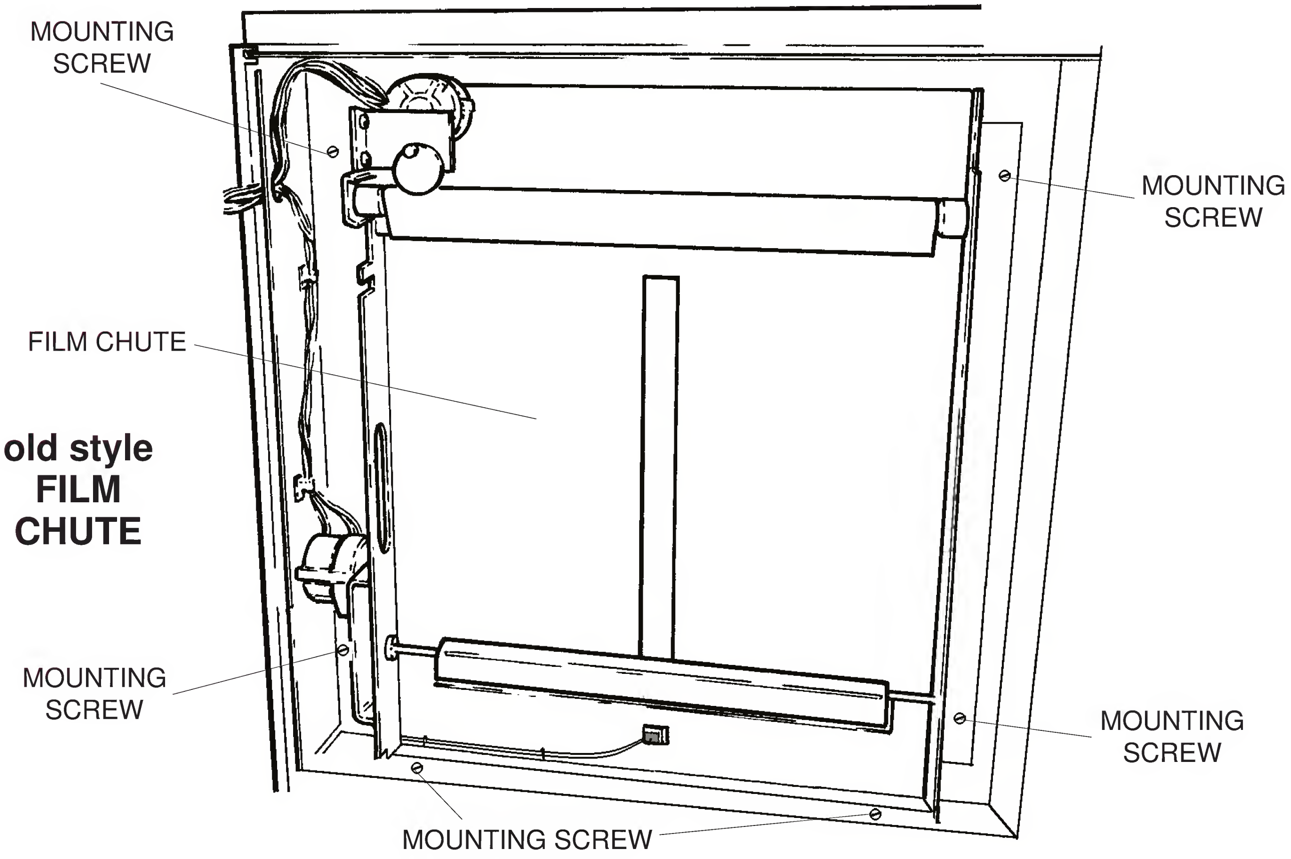

MOUNTING SCREW
MOUNTING SCREW
FILM CHUTE
old style FILM CHUTE
MOUNTING SCREW
MOUNTING SCREW
MOUNTING SCREW

figure 3-1

4. Adjust the 4 LEVELLING FEET until the FRAME is horizontal in the X and Y direction.

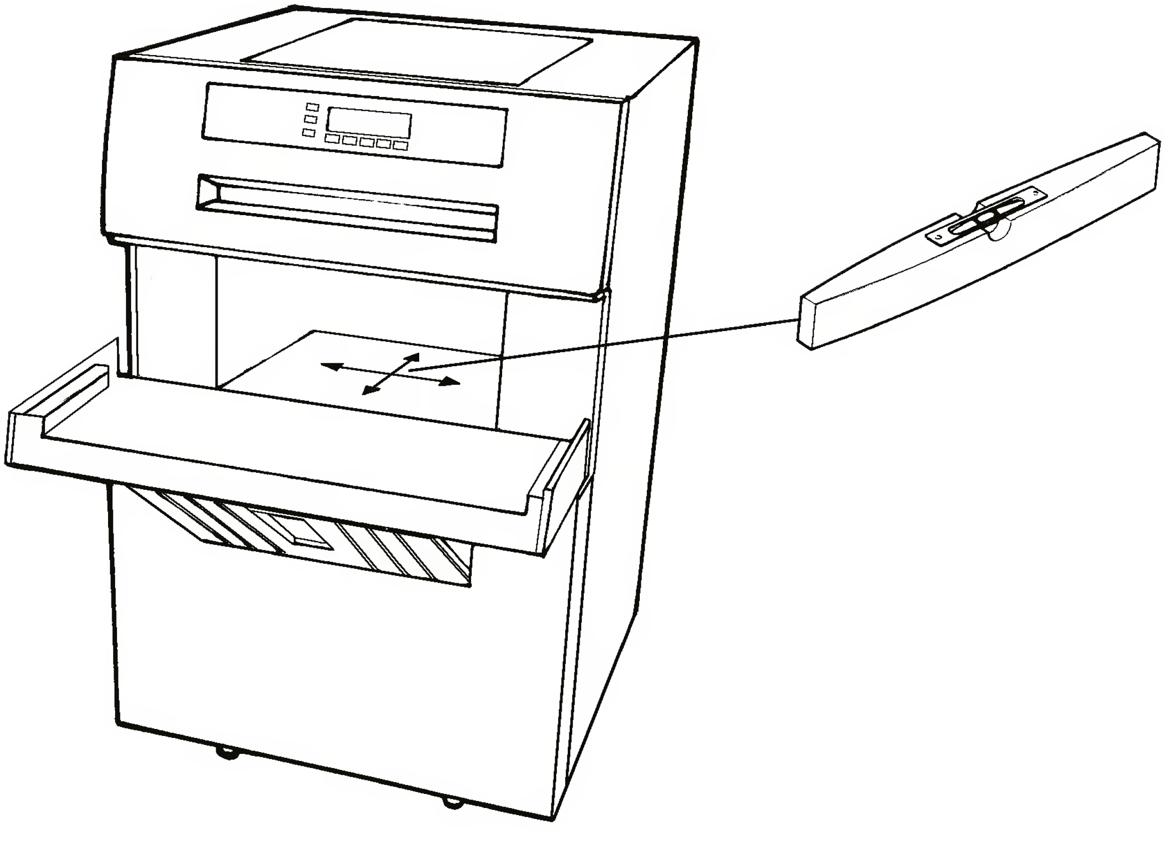


figure 3-2

CASSETTE AREA

INPUT FLAP

PURPOSE:

This adjustment ensures that the INPUT FLAP is closed light-tight when a CASSETTE is fed into the MULTILOADER 300.

1. Take off the PANEL.

2. Take off the FRONT PANEL with the DISPLAY.

3. Close the INPUT FLAP.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
Select COMPONENT TEST from the MAIN MENU..................................... press ENTER
Select CASSETTE MOTORS .... press ENTER
Select CASSETTE INPUT FLAP M1.. press ENTER
Select CLOSE

4. Adjust SENSOR B4/C_IF_EC INPUT FLAP CLOSED until the INPUT FLAP rests properly in the BLOCK GROOVE.

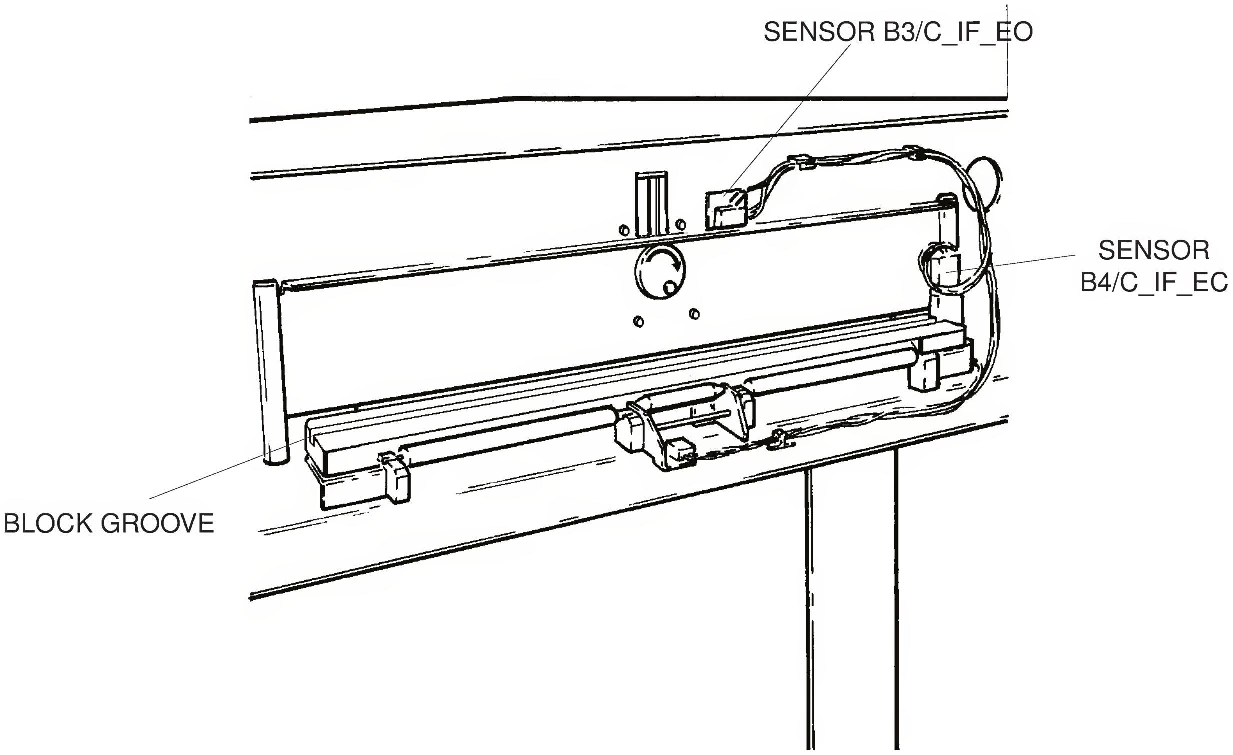


figure 3-3

5. Open the INPUT FLAP.
Select OPEN

6. Adjust SENSOR B3/C_IF_EO INPUT FLAP OPEN that the FLAP is fully open.

7. Exit the SERVICE MODE.
Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER.

CASSETTE REGISTRATION SENSOR B2.

Purpose:

To make sure that the SENSOR B2 is not deactuated by a curved CASSETTE before it is removed from the ML300.

1. Take out the MAGAZINES to avoid FILM FOGGING.

2. Take off the PANELS.

3. Check that the distance between the CASSETTE REGISTRATION ROLLER level and the TRANSPORT ROLLER level is ≥ 3mm.

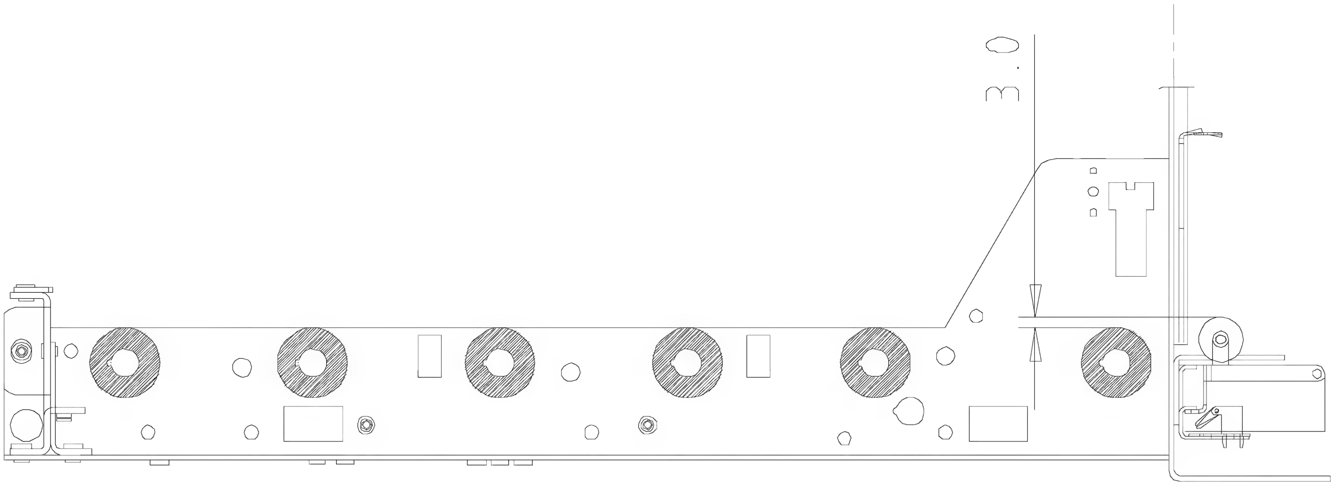
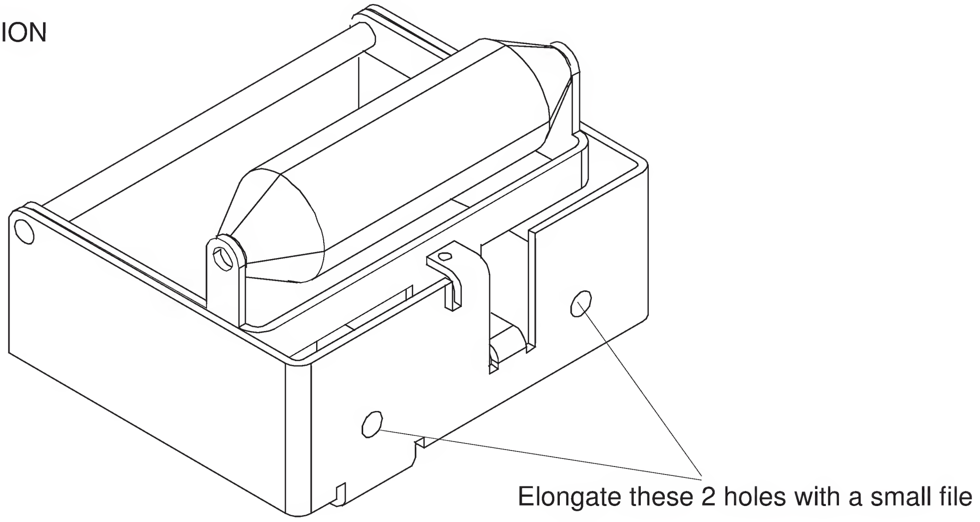


figure 3-4

4. If the distance is not correct, do the following:

5. Remove the DISPLAY PANEL.

6. Remove the CASSETTE REGISTRATION MECHANISM.


CASSETTE REGISTRATION MECHANISM
Elongate these 2 holes with a small file

NOTE

The PANEL may block the function of the CASSETTE REGISTRATION MECHANISM, if the MECHANISM is mounted too high.

figure 3-5

7. Elongate the 2 MOUNTING HOLES with a small file. This allows to move the complete CASSETTE REGISTRATION MECHANISM up or down to adjust it to the correct level.

8. Install the CASSETTE REGISTRATION MECHANISM. Make sure that the level of the CASSETTE REGISTRATION ROLLER is ≥ 3mm above the level of the TRANSPORT ROLLER.

9. Check that no cycle is started, when a CASSETTE is pulled out of the ML300.

10. Check that the CASSETTE REGISTRATION SENSOR B2 is working correctly with all PANELS mounted.

CASSETTE OPENER GUIDE SHOE POSITION

PURPOSE:

To ensure that the CASSETTE is opened correctly.

Note

- This adjustment must be carried out when replacing a CASSETTE OPENER ASSEMBLY.
- This adjustment can not be done on ML300 with SN < 2377, unless it has been necessary to replace the CASSETTE OPENER ASSEMBLY.

1. Move the CASSETTE OPENER down until the black GUIDE SHOES (left and right) touch the CASSETTE STOP (the OPENER must be released).

2. Adjust the gap between the lower edge of the GUIDE SHOE and the CASSETTE STOP to 2 to 4 mm as shown below. Ensure that the LOCK NUT is tight.

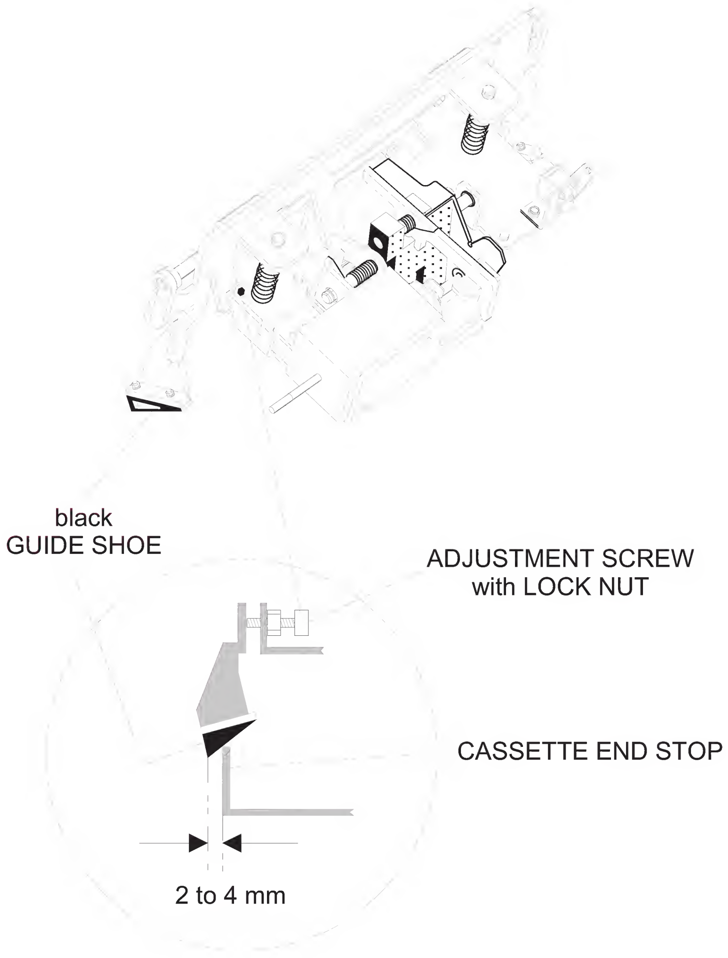

black
GUIDE SHOE
ADJUSTMENT SCREW
with LOCK NUT
CASSETTE END STOP
2 to 4 mm

figure 3-6

CASSETTE OPENER MECHANISM

PURPOSE:

This adjustment makes sure that all CASSETTES are opened and closed correctly and that the OPENER MECHANISM moves over the correct distance to avoid scratches on the CASSETTE LID SCREEN caused by the CASSETTE SUCKER BAR.

Warning

BE VERY CAREFUL WHEN DOING THIS ADJUSTMENT. THE OPENER MOTOR AND THE OPENER MECHANISM ARE VERY STRONG. THEY MAY SQUEEZE YOUR HAND AND TRAP YOU IF YOU TRY TO STOP IT MANUALLY. NEVER START THE CASSETTE OPENER MOTOR WHEN SOMEONE'S HANDS ARE IN THE CASSETTE AREA.

Note

This adjustment may affect the adjustment CASSETTE BLOW PIPE POSITION.

1. Switch off the ML 300.

2. Take off the PANELS.

3. Loosen the MOUNTING SCREWS of the OPENER STOP PLATE.

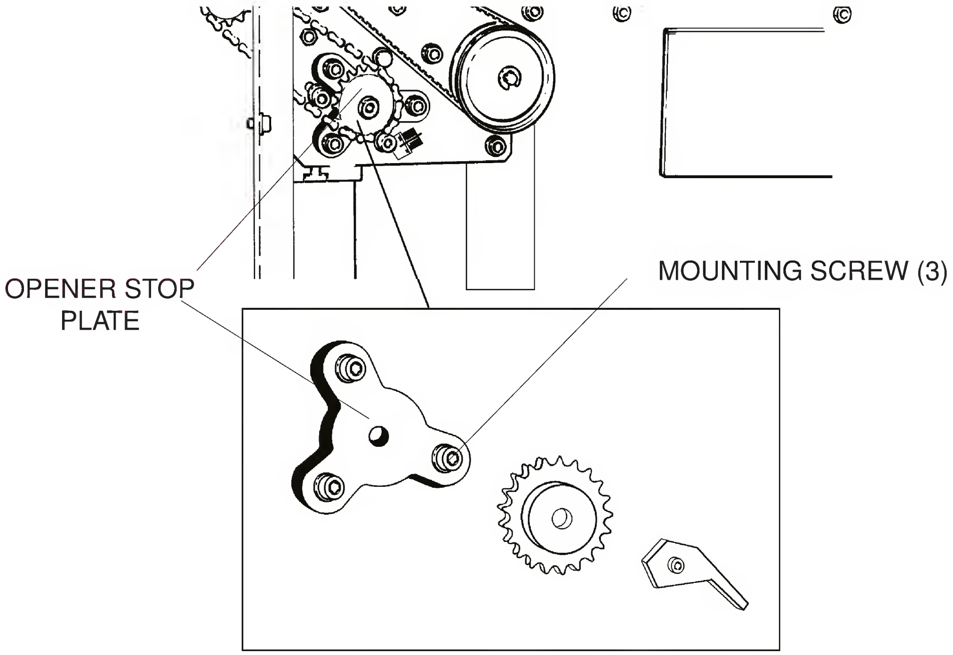


figure 3-7

4. Move the CASSETTE OPENER to its fully up position.

Start the SERVICE PROGRAM .... press ENTER
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select CASSETTE MOTORS .... press ENTER
Select CASSETTE OPENING M5 .... press ENTER
Select UP

5. If the OPENER BRACKET is vertical proceed with step 8 else proceed with step 6.

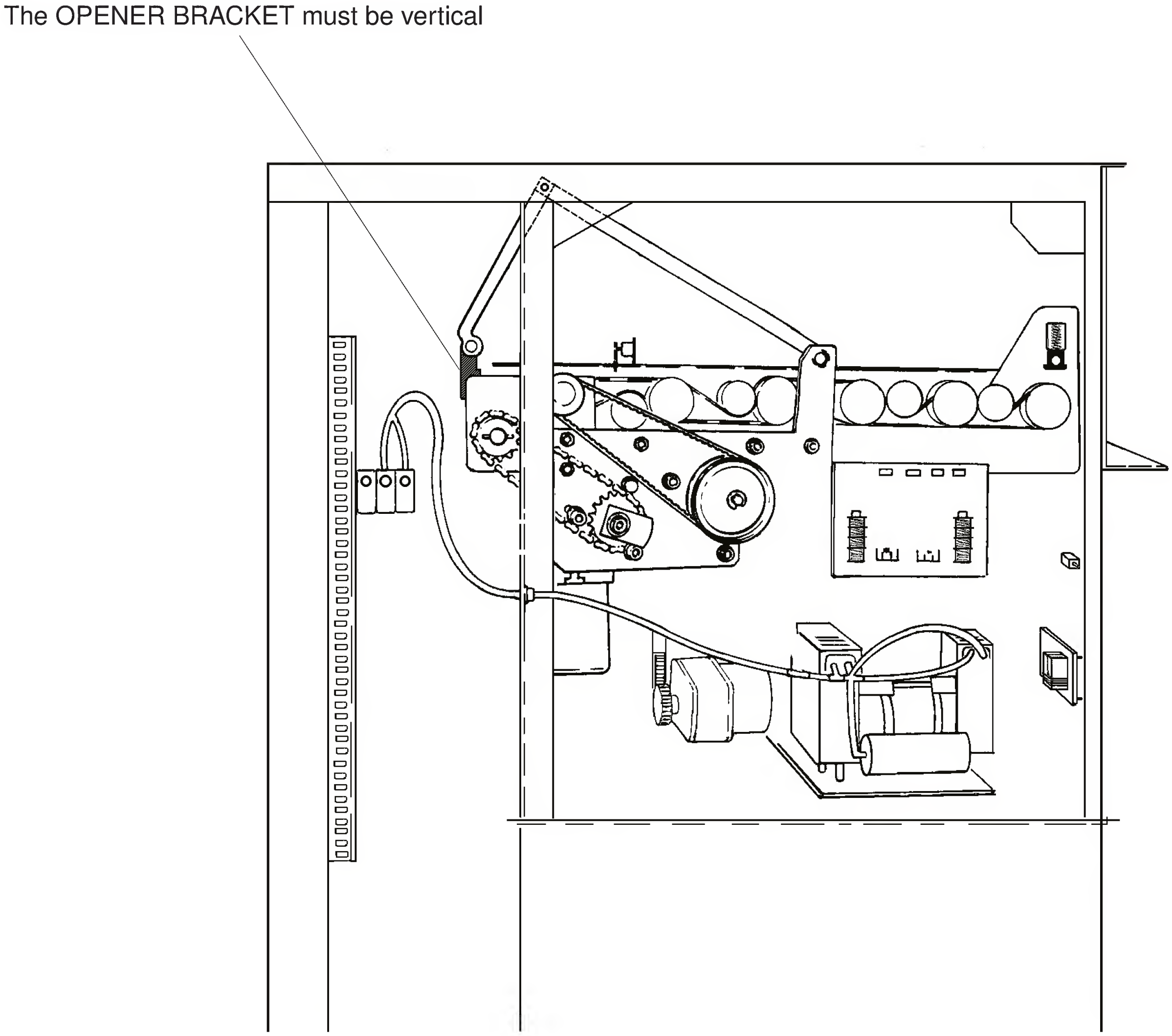


figure 3-8

6. Adjust the ACTUATOR of SENSOR B15/C_OP_EO CASSETTE OPENER END SWITCH OPEN as required.

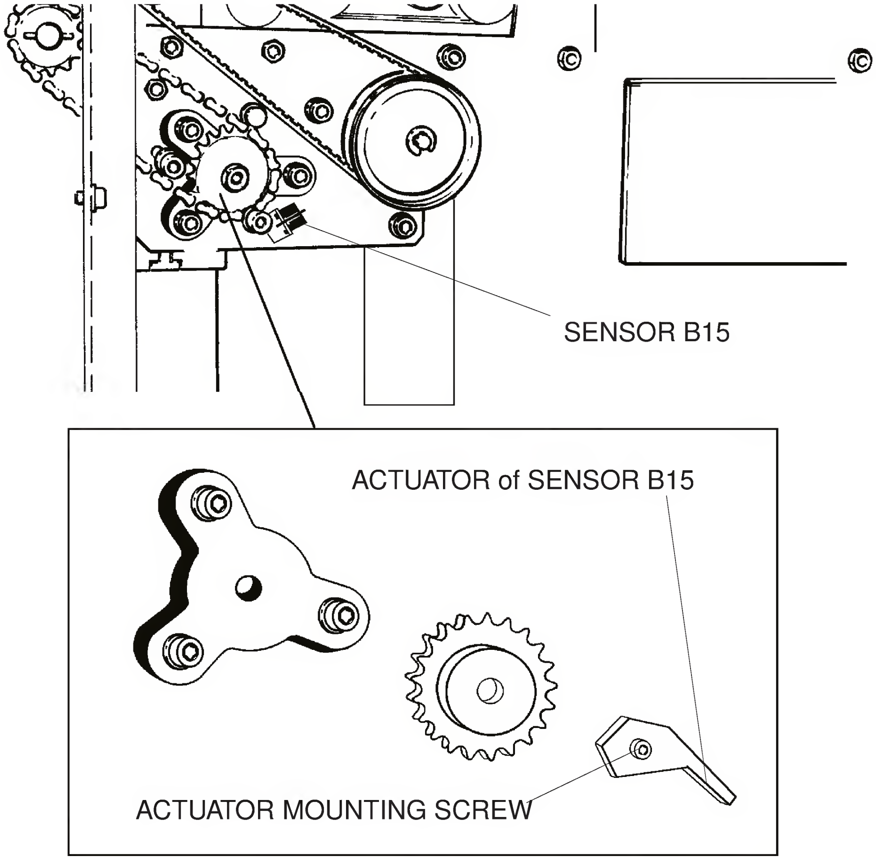


figure 3-9

7. Move the CASSETTE OPENER fully down.

Select DOWN

Proceed with step 4.

8. Fasten the ACTUATOR MOUNTING SCREW.

Note

It is not possible to see the gap of 1mm. You have to set it by feeling.

9. With the OPENER still in the upper position, turn the STOP PLATE counter-clockwise until the STOP BOLT touches the STOP PIN of the DRIVE GEAR. Turn the STOP PLATE clockwise until there is a gap of approximately 1mm between the STOP PIN and the STOP BOLT.

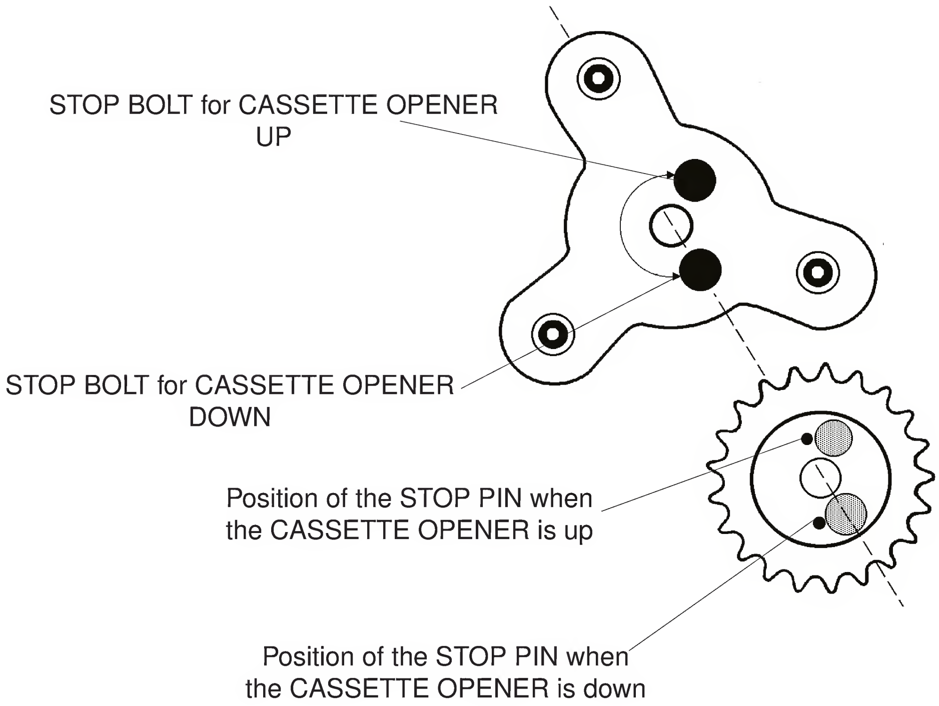

STOP BOLT for CASSETTE OPENER UP
STOP BOLT for CASSETTE OPENER DOWN
Position of the STOP PIN when the CASSETTE OPENER is up
Position of the STOP PIN when the CASSETTE OPENER is down

figure 3-10

10. Tighten the MOUNTING SCREWS of the STOP PLATE.

11. Check the position of the STOP PLATE.

-Disconnect SENSOR B15(CONNECTOR X9)
-Select UP. The MOTOR M5 must turn for a short distance and is stopped then (A high pitched tone can be heard at the same time.)
-Connect SENSOR B15.
-Select DOWN until the CASSETTE OPENER stops in its bottom position.
-Manually actuate SENSOR B15. Do not break its thin PLASTIC ACTUATOR.
-Select DOWN again. MOTOR M5 should turn for a short distance and is stopped then. A high pitched tone can be heard at the same time.
-Select UP until the CASSETTE OPENER stops in its uppermost position.

If the UP and DOWN positions are correct proceed with step 12. Otherwise reposition the STOP PLATE and repeat step 11.

12. Exit the SERVICE MODE.

Press 3 times BACKSPACE

Select LEAVE THE COMPONENT TEST..press ENTER

Select QUIT ML300 SERVICE MODE..press ENTER

Select Quit the program...press ENTER

CASSETTE BLOW PIPE HOLDER

Purpose:

To make sure that the BLOW PIPE HOLDER moves in the indicated directions.

1. Check the movement of the BLOW PIPE HOLDERS in the direction of the arrows. Be sure that the spring function is correct.

2. If necessary, repair or replace the damaged parts.

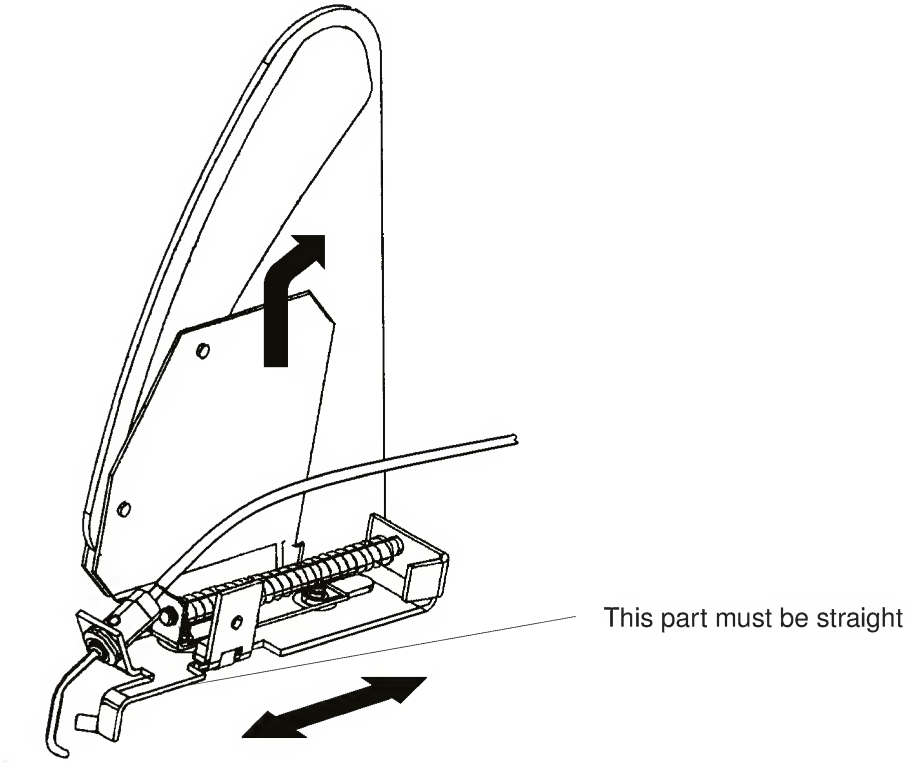


figure 3-11

CASSETTE BLOW PIPE POSITION

Purpose:

To ensure that the BLOW PIPE does not interfere with the edge of the CASSETTE LID.

1. Switch off the ML300 and take off the PANELS.

2. Place the BLOWPIPE ADJUSTMENT TOOL under the BLOW PIE as shown.

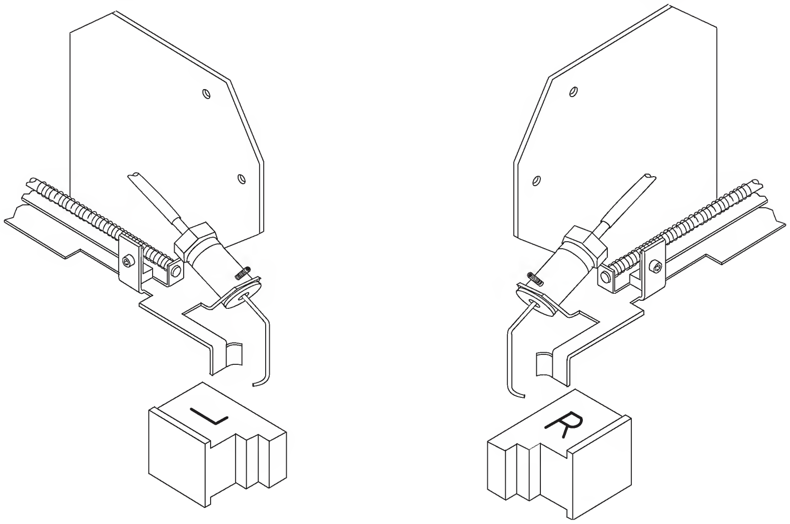


figure 3-12

3. If the BLOW PIPE is not in the correct position, loosen the SET SCREW , bring the BLOW PIPE into the correct position and tighten the SET SCREW.

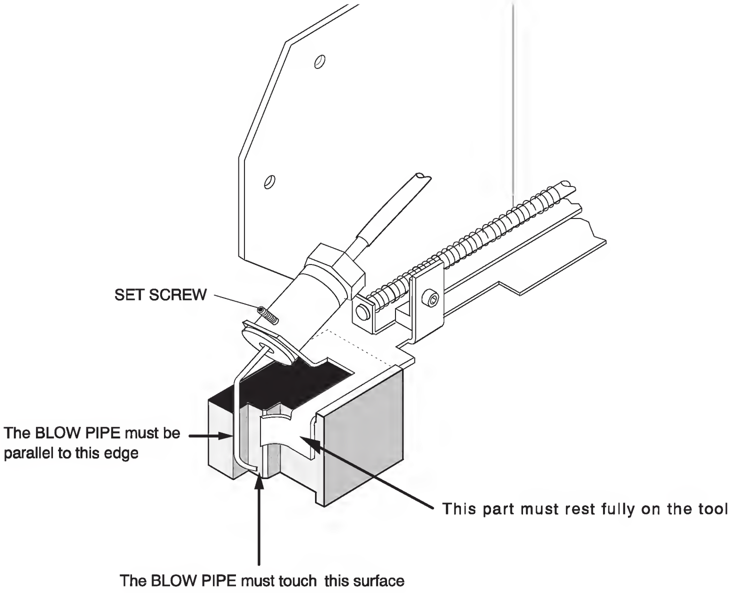

SET SCREW
The BLOW PIPE must be parallel to this edge
This part must rest fully on the tool
The BLOW PIPE must touch this surface

figure 3-13

4. Check with a CASSETTE that the BLOW PIPE TIP is below the CASSETTE LID. If the TIP is too high, install a new BLOW PIPE.

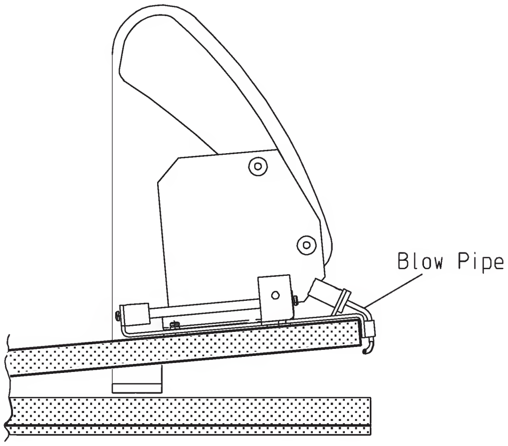


figure 3-14

CASSETTE SUCKER BAR

Purpose:

This adjustment ensures that the CASSETTE SUCKER BAR CARRIAGE travels the correct distance, that the rear end position is correct, and the CASSETTE SUCKERS are withdrawn correctly from the film as it is picked up by the TRANSPORT ROLLERS to avoid static or pressure marks.

Note

The main cause of SUCKER MARKS is contamination of the sucker surface. This contamination can be any number of substances ranging from natural body oil, sweat or even KODAK Intensifying Screen Cleaner and anti static Solution (which has sometimes been recommended for cleaning SUCKERS!). Do not use KODAK Intensifying Screen Cleaner and Anti Static Solution to clean the SUCKERS!

How to clean the SUCKERS

This procedure should be followed if the SUCKERS are touched or if new ones are fitted.

1. Abrade the surface of the SUCKER carefully using Emery Cloth grade 400 or a similar material.

2. Lightly coat the SUCKER with NATURAL (un-perfumed) talcum powder, available from chemists and pharmacies.

Special Tools:

- VERNIER CALLIPER
- ADJUSTMENT PLATE 9194801

PART 1

1. Set the MOUNTING BRACKET of SENSOR B17 at a distance of 154 ± 1 mm to the inner side of the REAR STEEL ROD.

2. Set the MOUNTING BRACKET of SENSOR B18 at a distance of 58.5 ± 1 mm to the outer side of the REAR STEEL ROD.

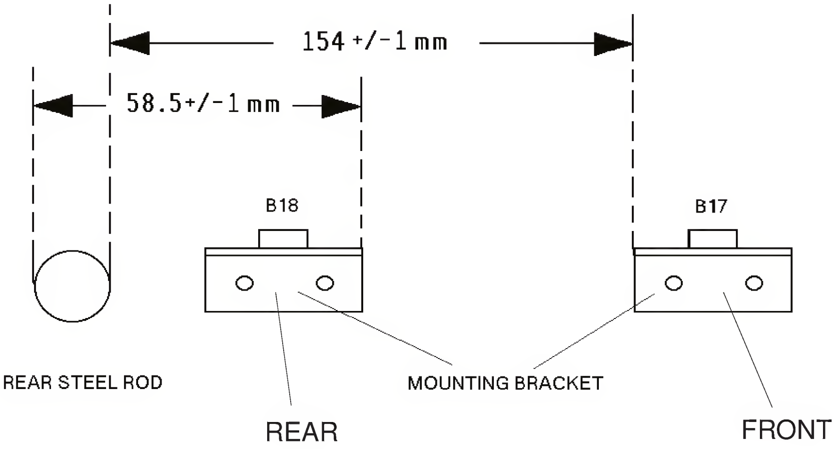

154 +/-1 mm
58.5+/-1 mm
B18
B17
REAR STEEL ROD
MOUNTING BRACKET
REAR
FRONT

figure 3-15

PART 2: CASSETTE SUCKER BAR ADJUSTMENT

Note

This is a ML700 TOOL.

1. Place the ADJUSTMENT PLATE 9193386 on the TRANSPORT ROLLERS and push it to the CASSETTE END STOP.

2. Manually move the CASSETTE SUCKER BAR CARRIAGE forward for approximately 40mm. This allows to tilt the CASSETTE SUCKER BAR. See the figure on the next page.

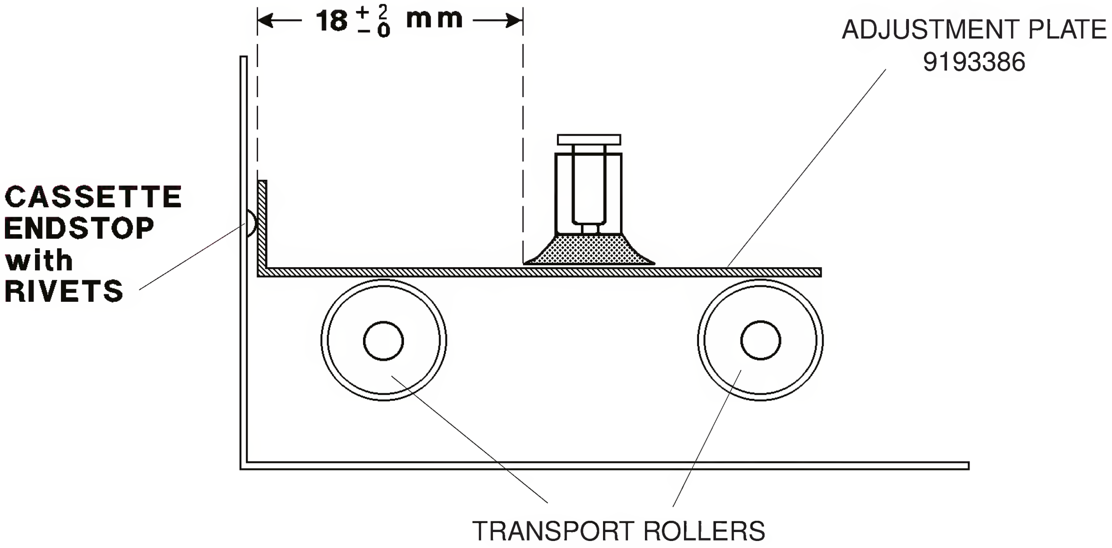

18^{+2}_{-0} mm
ADJUSTMENT PLATE 9193386
CASSETTE ENDSTOP with RIVETS
TRANSPORT ROLLERS

figure 3-16

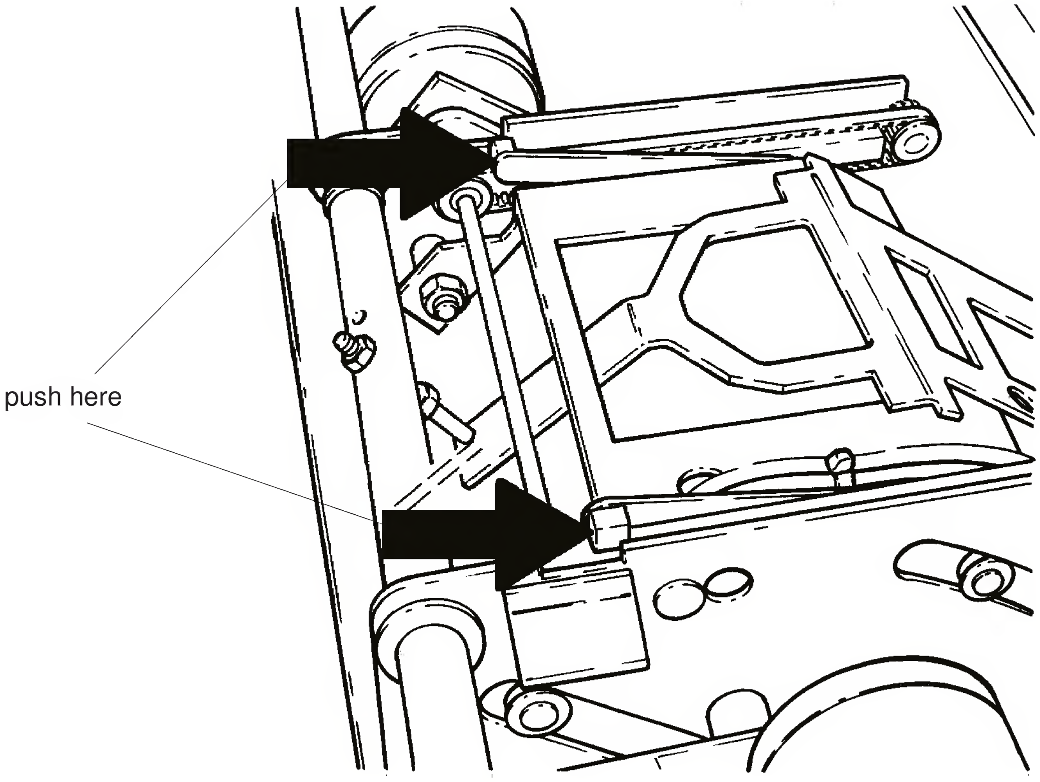


figure 3-17

Note

The SOLENOID Y7 will be switched ON for 59 seconds. This time is limited to avoid overheating of the SOLENOID.

3. Tilt the CASSETTE SUCKER BAR.

Start the SERVICE PROGRAM

Select SERVICE MODE from the GLOBAL MENU .... press ENTER

ENTER SERVICE MODE MESSAGE is displayed.. press ENTER

UNIT DATA are displayed .... press ENTER

Select COMPONENT TEST from the MAIN MENU...................................... press ENTER

Select SOLENOIDS .... press ENTER

Select TILTING CASSETTE SUCKER BAR Y7... press ENTER

Select SOLENOID ON

4. Manually move the CASSETTE SUCKER BAR CARRIAGE forward until the CASSETTE SUCKERS reach the ADJUSTMENT PLATE 9193386.

5. Check that the rear edge of the SUCKERS is 18 mm +2 -0 away from the rear of the adjustment plate.

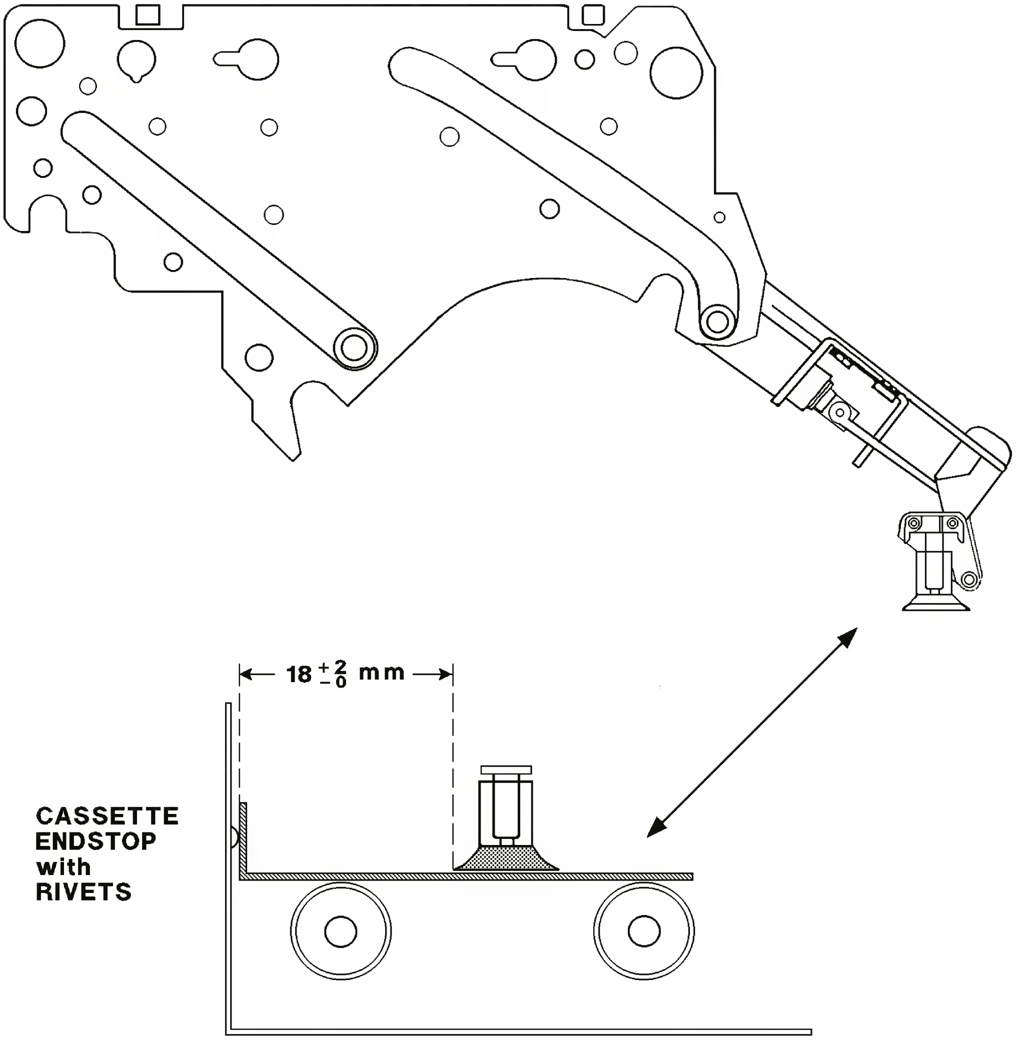

18^{+2}_{-0} mm
CASSETTE ENDSTOP with RIVETS

figure 3-18

6. If the distance is not correct, loosen the RETAINERS and move the CONVEYOR forward or backward as required, and fasten the RETAINERS.

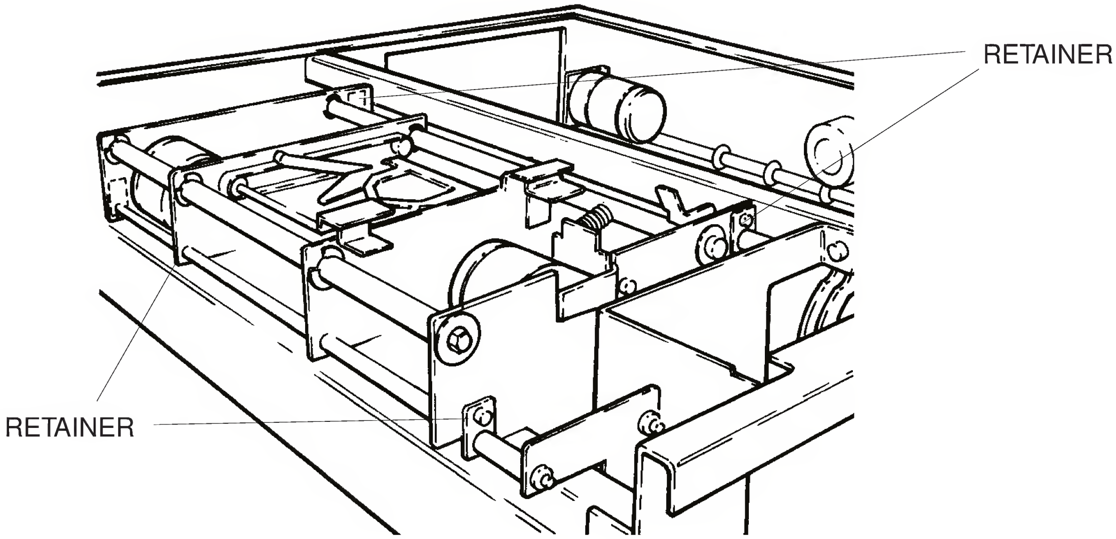

RETAINER
RETAINER

figure 3-19

7. If it is not possible to reach the 18 mm, bend the parts shown up or down as required.

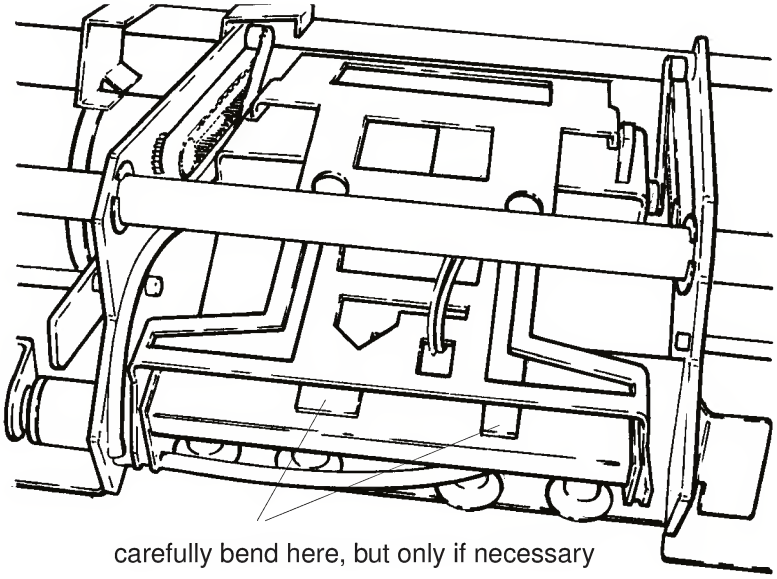

carefully bend here, but only if necessary

figure 3-20

8. Exit the SERVICE MODE.

Press 3 times BACKSPACE

Select LEAVE COMPONENT TEST .... press ENTER

Select Quit ML300 SERVICE MODE .... press ENTER

Select Quit the program .... press ENTER

FUNCTION TEST

1. Enable the CONTINUES LOOP MODE.

Move SWITCH S1-1 on PCB A1 to the ON (up) position.

Select FUN at the OPERATORS DISPLAY

Select SYSTEM at the OPERATORS DISPLAY

Select CONTAIN at the OPERATORS DISPLAY

Select CLEAR at the OPERATORS DISPLAY

The ML300 is now set to the CONTINUOUS LOOP MODE. This means after a loaded CASSETTE is fed in, this CASSETTE becomes unloaded and loaded repeatedly.

2. Feed in a loaded CASSETTE 18x24 cm.

3. Observe from the side that the trailing edge of the FILM just touches the CASSETTE SUCKERS (look at the middle of the SUCKER BAR), when the FILM is transported into the CONVEYOR.

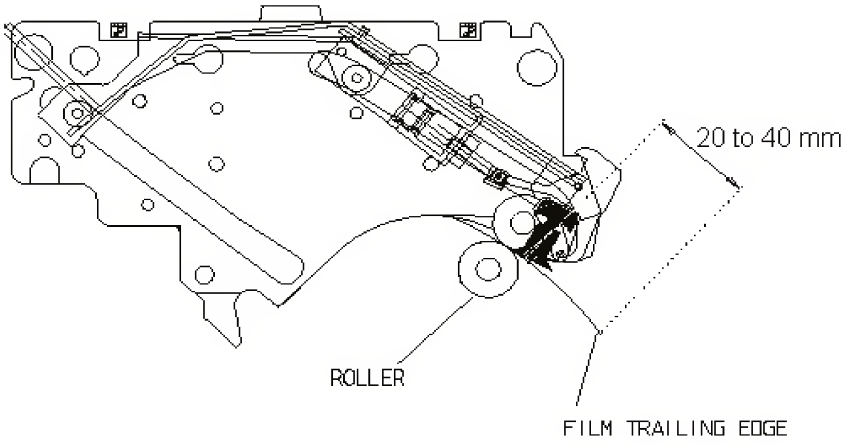


figure 3-21

Note

- Do not forget to lock the NUTS
- The END STOP SCREW will lift the CASSETTE SUCKER BAR away from the film when it enters the ROLLERS.

4. If the distance between FILM and SUCKERS is not correct, turn the END STOP SCREW in or out as required.

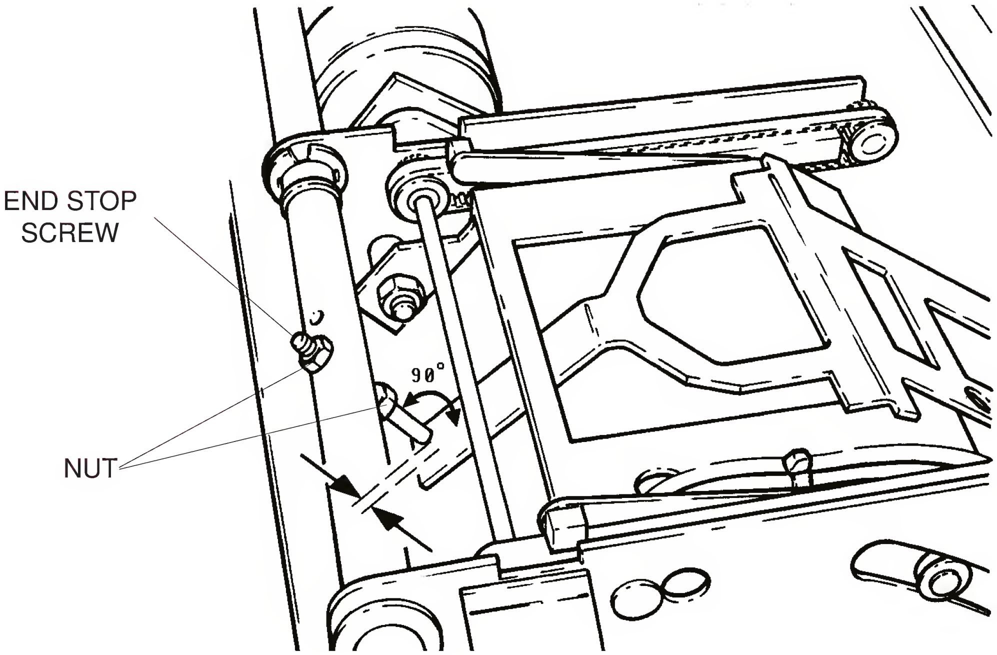


figure 3-22

5. Disable the CONTINUOUS LOOP MODE.
   Pull out the CASSETTE
   Switch off the ML300. Wait 5 seconds and switch it on again.

6. Move SWITCH S1-1 on PCB A1 to OFF (down) for normal operation.

CASSETTE TYPE 2 SENSORS. (B21 and B22).

Purpose

This adjustment ensures that both TYPE 2 SENSORS recognise the TYPE 2 STICKER on the CASSETTE. If the SENSORS are not adjusted correctly a normal CASSETTE may be detected as a TYPE 2 CASSETTE.

Note

- This adjustment is only possible if PCB A8 carries the INDEX B. This INDEX is printed at the bottom right corner (after the number) of the PCB. PCB's with the INDEX A do not have the necessary potentiometers. These PCBs were only used on the very first XML300s.
- Avoid bright sunlight. It may cause wrong results when you measure the output voltage of SENSORS B21 and B22.

1. Take off the TOP-, REAR-, and RIGHT-HAND PANEL of the XML300.

2. Manually feed in a CASSETTE with 2 TYPE 2 reflective STICKERS and centre it. This ensures that the TYPE 2 SENSORS B21 and B22 are correct at the TYPE 2 STICKERS.

Warning

Be careful when operating the CASSETTE OPENER. Make sure that no one's hands are in the CASSETTE AREA

3. Start the SENSOR TEST.

Press ESCAPE twice

Start the SERVICE PROGRAM.

Select SERVICE MODE from the GLOBAL MENU .... press ENTER

ENTER SERVICE MODE MESSAGE is displayed .... press ENTER

UNIT DATA are displayed .... press ENTER

Select COMPONENT TEST from the MAIN MENU .... press ENTER

Select SENSORS .... press ENTER

Select SENSOR TEST with SOUND .... press ENTER

4. Connect the DVM between TP15(SENSOR B21) and TP10 GND PE on PCB A8.

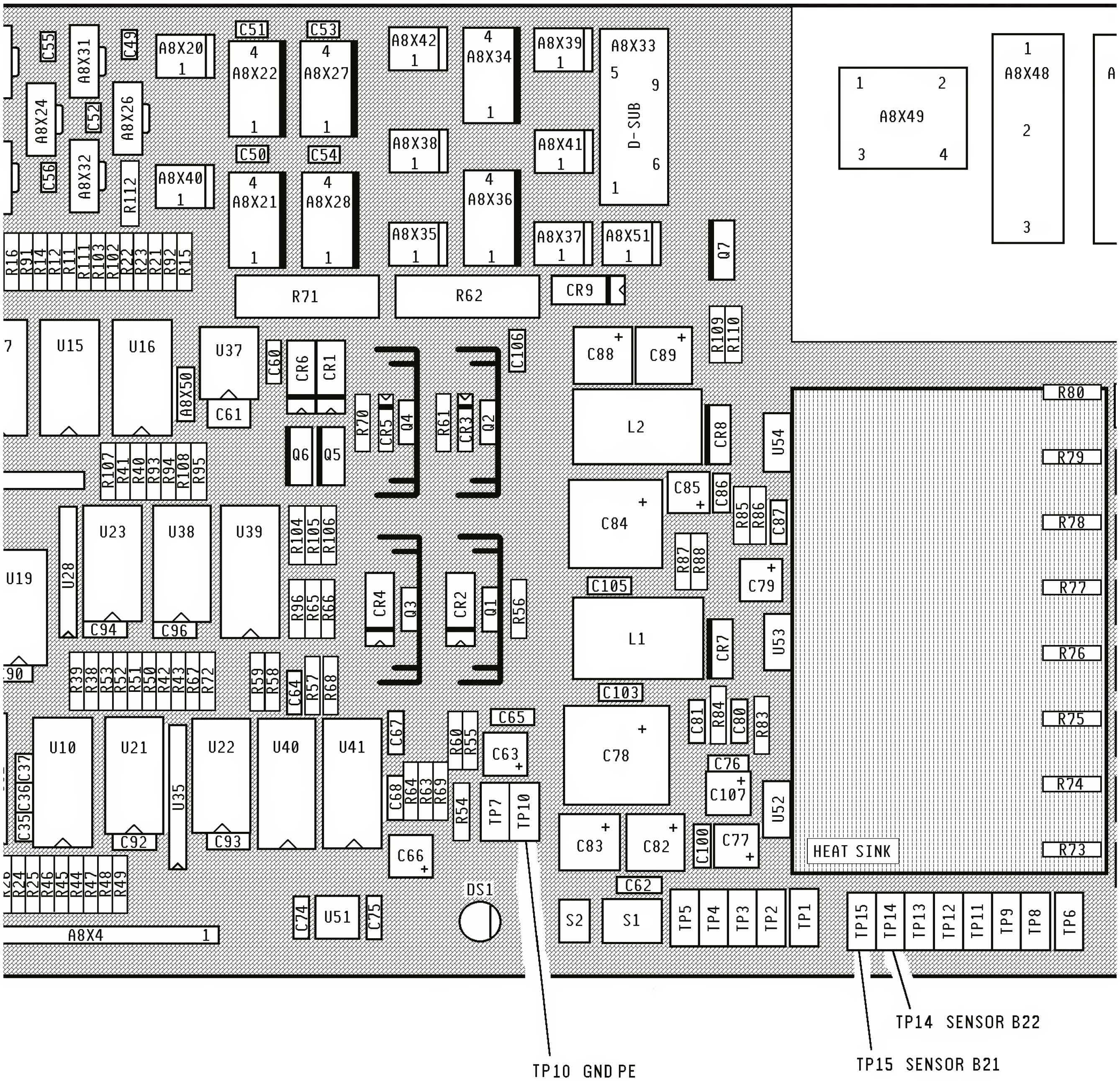

TP10 GND PE
TP14 SENSOR B22
TP15 SENSOR B21
HEAT SINK
D-SUB

figure 3-23

5. Check if the voltage reading is ≤ 1.0V. If the voltage is correct, proceed with step 8, if not proceed with step 6.

6. Adjust the position of SENSOR B21 until the voltage reading reaches the minimum.

7. Adjust R100 on PCB A8 until the voltage reaches a minimum voltage of ≤ 1.0V. Do not adjust R100 any further.

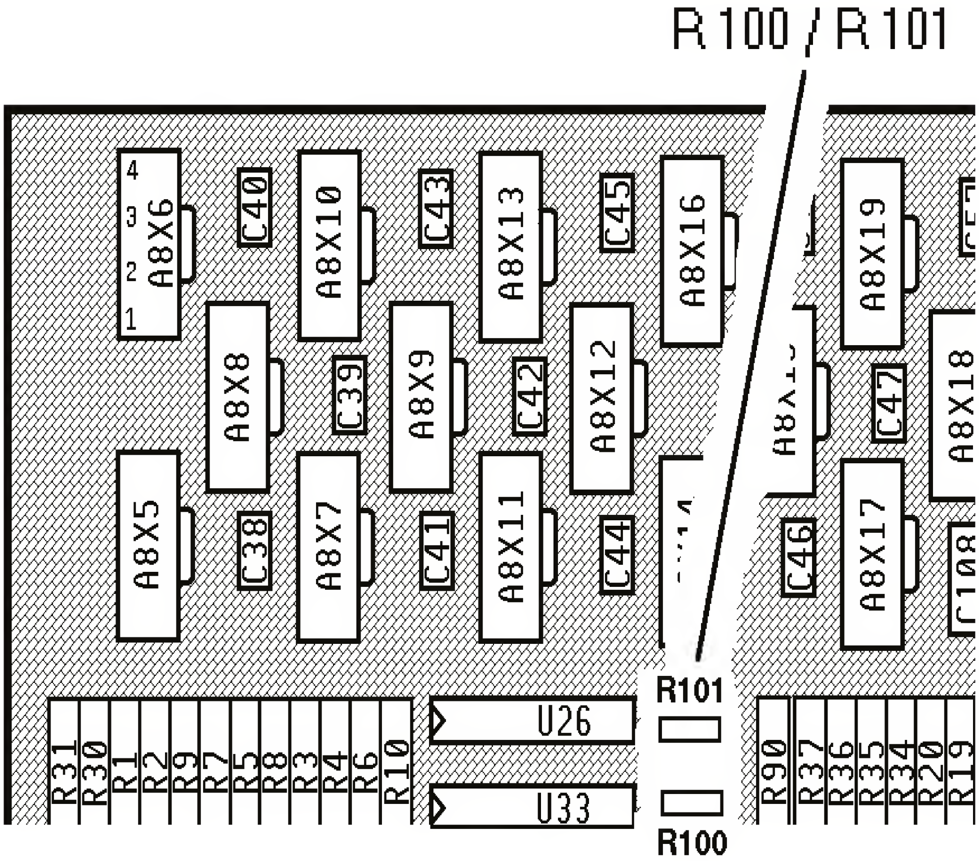

R100 / R101
A8X6
4
3
2
1
C40
A8X10
C43
A8X13
C45
A8X16
A8X19
A8X8
C39
A8X9
C42
A8X12
C47
A8X18
A8X5
C38
A8X7
C41
A8X11
C44
C46
A8X17
R101
U26
U33
R100
R31
R30
R1
R2
R9
R7
R5
R8
R3
R4
R6
R10
R90
R37
R36
R35
R34
R20
R19

figure 3-24

8. Check that the SENSOR B21 is indicated as off when the reflective sticker is covered. The voltage between TP 15 and TP 10 should be > 4.0V. If X-Omatic CASSETTES (yellow) are used, insert a CASSETTE without reflective stickers and check if the voltage is > 3.5V. If the voltage is correct proceed with step 9. If the voltage is not correct, increase it with R100 on PCB A8 until it reaches >3.5 V. Now feed in a CASSETTE with reflective stickers and repeat step 5 to 8.

9. Connect the DVM between TP14(SENSOR B22) and TP10 GND PE on PCB A8.

10. Check if the voltage reading is ≤ 1.0V. If the voltage is correct proceed with step 13, else proceed with step 11.

11. Adjust the position of SENSOR B22 until the voltage reading reaches the minimum.

12. Adjust R101 on PCB A8 until the voltage reaches a minimum of ≤ 1.0V. Do not adjust R101 any further.

13. Check that the SENSOR B22 is indicated as off when the reflective sticker is covered. The voltage between TP14 and TP 10 should be > 4.0V. If X-Omatic CASSETTES (yellow) are used, insert a CASSETTE without reflective stickers and check if the voltage is > 3.5V. If the voltage is correct proceed with step 14. If the voltage is not correct, increase it with R101 on PCB A8 until it reaches >3.5 V. Now feed in a CASSETTE with reflective stickers and repeat step 10 to 13.

14. Exit the SERVICE MODE.
    Press 3 times BACKSPACE .
    Select LEAVE COMPONENT TEST .... press ENTER
    Select QUIT ML300 SERVICE MODE.. press ENTER
    Select Quit the program... press ENTER

15. Take out the CASSETTE.

16. Mount the PANELS.

17. Check with different TYPE 2 CASSETTES (MAMMO and X-OMAT) for correct operation.

CASSETTE LENGTH

Purpose:

This adjustment ensures that the correct CASSETTE LENGTH is measured.

Warning

BE CAREFUL WHEN WORKING IN THE CASSETTE OPENER AREA. THE OPENER MOTOR AND THE OPENER MECHANISM ARE VERY STRONG. THEY CANNOT BE MOVED MANUALLY. THEY MAY SQUEEZE YOUR HAND AND TRAP YOU IF YOU TRY TO STOP THEM MANUALLY. NEVER START THE CASSETTE OPENER MOTOR WHEN SOMEONE'S HANDS ARE IN THE CASSETTE AREA.

1. Take off the TOP COVER.

2. Start the SENSOR TEST.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select SENSORS.. press ENTER
Select SENSOR TEST WITH SOUND.. press ENTER

3. Manually actuate SENSOR B11/C_CE_CL CASSETTE CENTRED LEFT and fix it in position with a piece of tape.

4. With a CASSETTE carefully actuate SENSOR B12/C_CE_CR CASSETTE CENTRED RIGHT.

5. SENSOR B12 has to be actuated when the CASSETTE is 1.5 ± 0.5 mm away from the right-hand CENTRING BAR.

6. If the distance is not correct, change the position of B12.

7. Manually actuate SENSOR B12/C_CE_CR CASSETTE CENTRED RIGHT and fix it in position with a piece of tape.

8. Take off the tape from SENSOR B11.

9. With a CASSETTE carefully actuate SENSOR B11/C_CE_CL CASSETTE CENTRED LEFT.

10. SENSOR B11 has to be actuated when the CASSETTE is 1.5 ± 0.5 mm away from the right-hand CENTRING BAR.

11. If the distance is not correct, change the position of B11.

12. Take off the tape from SENSOR B12.

13. Start the option CASSETTE LENGTH of the SCREEN PARAMETER.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER

Select CHANGE PARAMETER .... *press ENTER*
Select CASSETTE LENGTH .... *press ENTER*

Note

A small CASSETTE preferably 18x24 should be used.

14. Key in the measured length (NOT THE FILM SIZE !!!) of the selected CASSETTE in mm.

15. Insert the selected CASSETTE and press ENTER. The ML300 measures the CASSETTE LENGTH and calculates the correction value.

16. This correction value must be stored in the ML300 MEMORY.
Select STORE PARAMETERS .... *press ENTER*

17. Take out the CASSETTE.

18. Exit the SERVICE PROGRAM.
Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE .... *press ENTER*
Select Quit the program .... *press ENTER*

19. Close the TOP COVER.

SENSOR B20 VACUUM OFF

Purpose:

This adjustment ensures that the LEADING EDGE of the exposed CASSETTE FILM is detected to turn off the CASSETTE SUCKER BAR VACUUM. Use only SENSORS P/N 9228991. They are selected and known to be good.

Note

- Part 1 is valid for ML300 up to SERIAL NUMBER 1429. Part 2 is valid for ML300 with SERIAL NUMBER >01430.
- Take proper ESD SAFETY PRECAUTIONS when doing this adjustment.

PART 1:

The procedure is valid for all XML 300, no matter if CONNECTOR A8x50 has 3 pins or 6 pins. If it has 6 pins, leave the jumper in the position where it was set by the Manufacturer. It must be in the middle position (pin 2-5)

1. Switch off the XML 300.

2. Pull out U37 of PCB A8.

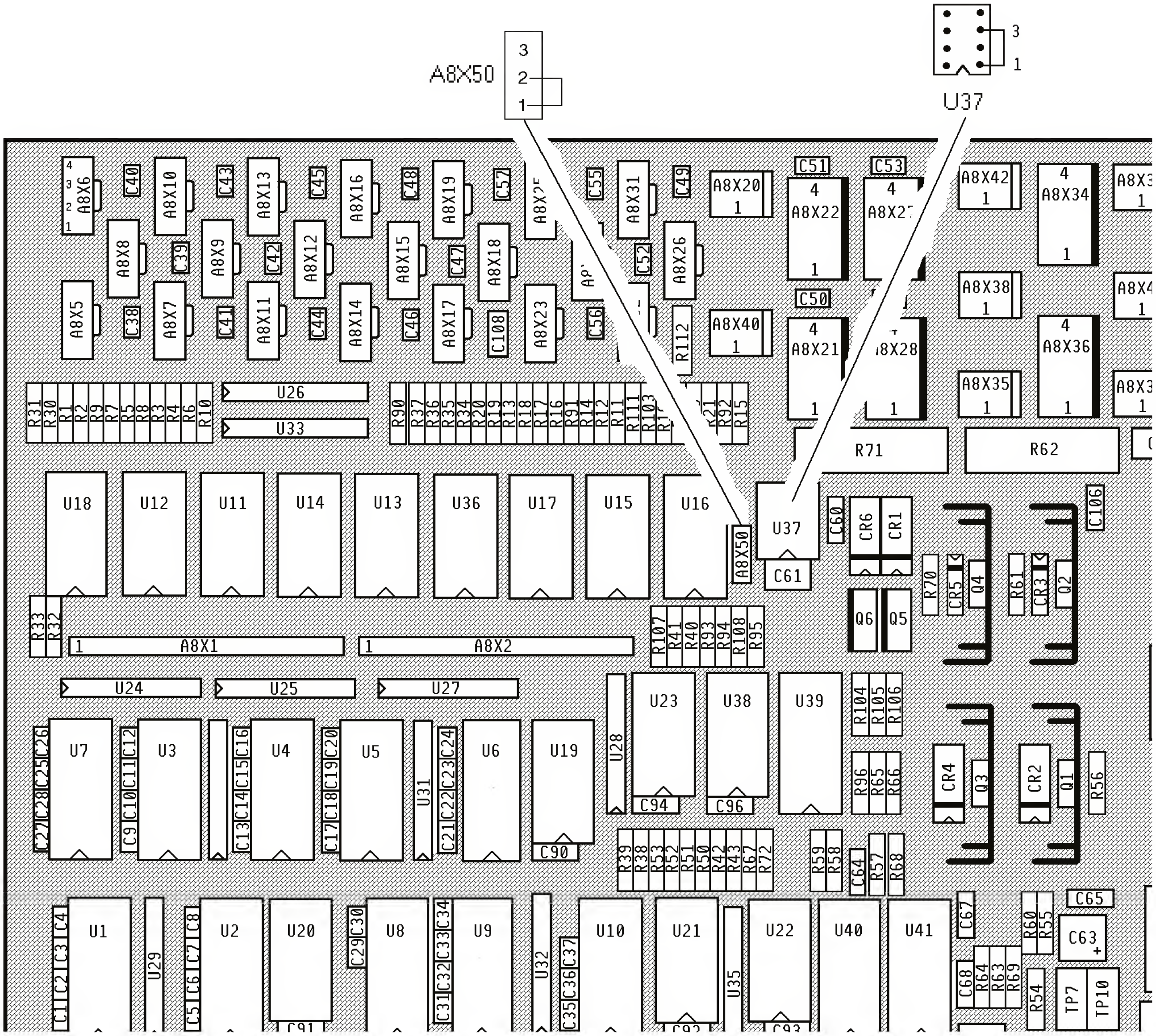

A8X50
3
2
1
U37
3
1
A8X6
C40
A8X10
C43
A8X13
C45
A8X16
C48
A8X19
C57
C55
A8X31
C49
A8X20
C51
C53
A8X22
A8X42
A8X34
A8X8
C39
A8X9
C42
A8X12
A8X15
C47
A8X18
C52
A8X26
A8X38
A8X5
C38
A8X7
C41
A8X11
C44
A8X14
C46
A8X17
C108
A8X23
C56
R112
C50
A8X40
A8X21
A8X28
A8X36
A8X35
U26
U33
R71
R62
U18
U12
U11
U14
U13
U36
U17
U15
U16
U37
C60
CR6
CR1
C106
C61
R70
CR5
Q4
R61
CR3
Q2
Q6
Q5
A8X1
A8X2
U24
U25
U27
U28
U23
U38
U39
U7
U3
U4
U5
U31
U6
U19
C94
C96
CR4
Q3
CR2
Q1
R56
C90
C64
C65
U1
U29
U2
U20
U8
U9
U32
U10
U21
U35
U22
U40
U41
C67
C63
C68
R54
TP7
TP10

figure 3-25

3. Short out PIN 1 to PIN 3 at the SOCKET of U37.

4. Connect the DVM to TP11 on PCB A8 and to TP10 (GND PE) on PCB A8. See the figure on the next page.

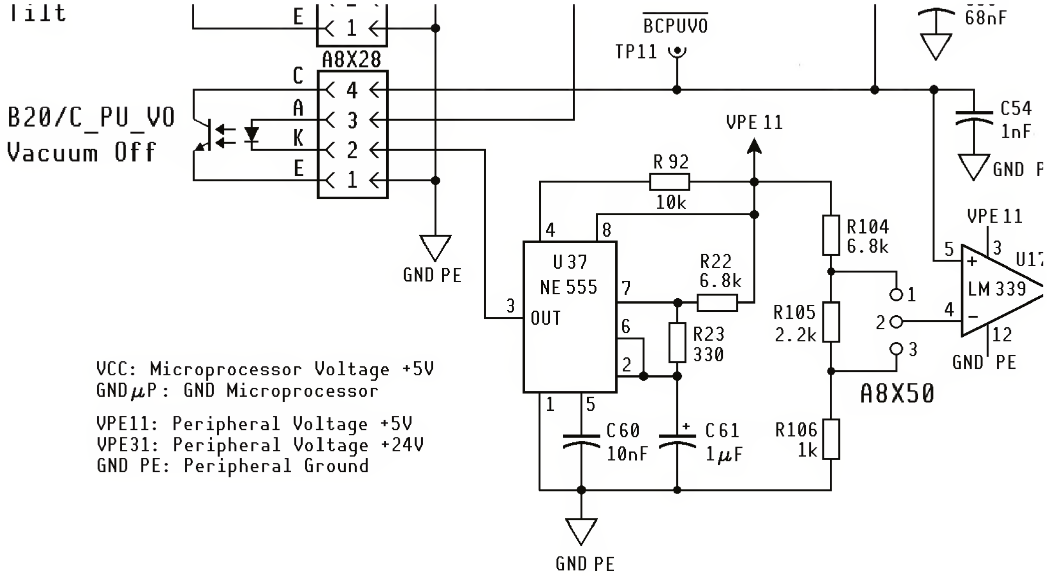

Tilt
E
1
A8X28
C
4
A
3
K
2
E
1
B20/C_PU_VO
Vacuum Off
GND PE
BCPUVO
TP11
68nF
C54
1nF
GND P
VPE 11
R 92
10k
4
8
U 37
NE 555
OUT
3
7
6
2
1
5
R22
6.8k
R23
330
C60
10nF
C61
1μF
R104
6.8k
R105
2.2k
R106
1k
1
2
3
A8X50
VPE 11
5
3
U17
LM 339
4
12
GND PE
GND PE
VCC: Microprocessor Voltage +5V
GNDμP: GND Microprocessor
VPE11: Peripheral Voltage +5V
VPE31: Peripheral Voltage +24V
GND PE: Peripheral Ground

figure 3-26

Warning

You are now working in the CASSETTE OPENER AREA. Be very careful that the CASSETTE OPENER is not started by accident. Do not override the INTERLOCK SYSTEM.

5. Switch on the XML 300.

6. Adjust the mechanical position of SENSOR B20 relative to its MIRROR, so that the indicated voltage is < 500mV.

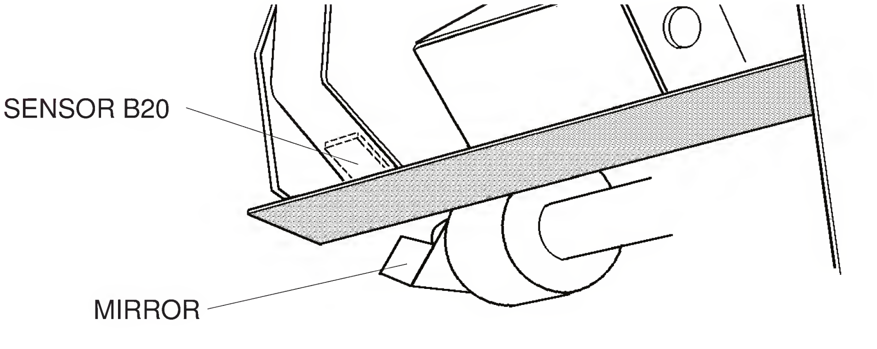

SENSOR B20
MIRROR

figure 3-27

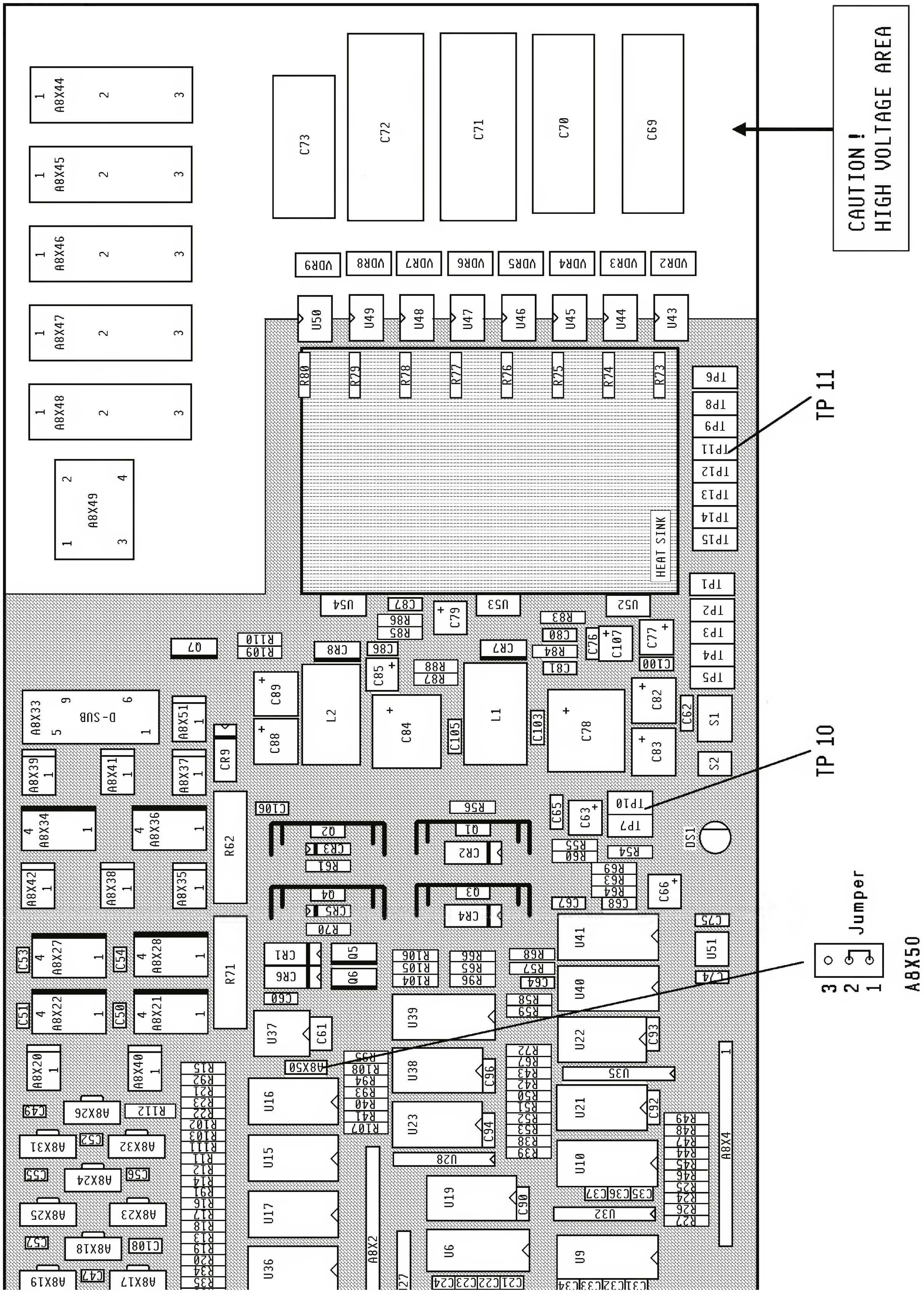

CAUTION !
HIGH VOLTAGE AREA
TP 11
TP 10
Jumper
A8X50
3
2
1
HEAT SINK
D-SUB

figure 3-28

7. Interrupt the infrared beam with a FILM. The voltage should now be > 1.9 V. Check this with all different types of customer films.

Note

The position of the MIRROR is not adjustable.

8. If the voltage is not correct, reposition SENSOR B20.

9. Switch off the XML 300.

10. Take out the JUMPER between PIN 1 and PIN 3 at the SOCKET of U37.

11. Install U37.

12. Check the position of JUMPER A8x50. The JUMPER has to be between 1 and 2.

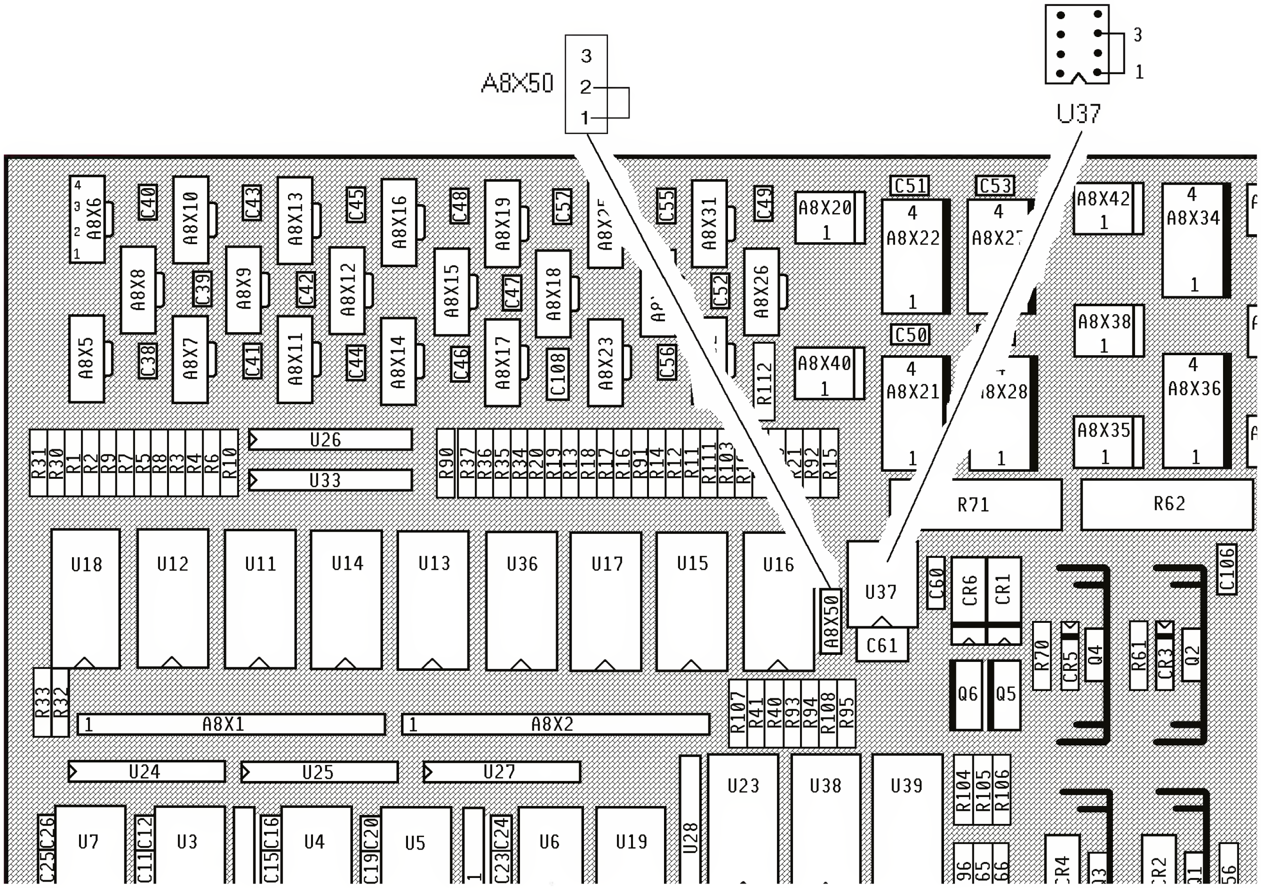

A8X50
3
2
1
U37
3
1
U18
U12
U11
U14
U13
U36
U17
U15
U16
A8X50
C61
R71
R62
A8X1
A8X2
U24
U25
U27
U26
U33
U7
U3
U4
U5
U6
U19
U28
U23
U38
U39

figure 3-29

13. Switch on the XML 300.

Warning

Keep your hands out of the CASSETTE OPENER AREA when doing these measurements.

14. This adjustment is sensitive to vibrations of the DRIVE SHAFT. Therefore it is not enough to do it in the static mode. It has to be repeated in the dynamic mode as well.

PART 2:

This procedure is valid for ML300 with SN 1430 and up.

Caution

Take proper ESD SAFETY PRECAUTIONS when doing this adjustment.

1. Start the SENSOR TEST.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select SENSORS .... press ENTER
Select SENSOR TEST WITH SOUND .... press ENTER

2. Set the JUMPER of A8X50 to the upper position (pin 3-4).See the drawing on the next page.

3. Adjust the position of the MIRROR of B20, so that B20 is indicated as off.

Use all types of CUSTOMER FILM to ensure correct operation.

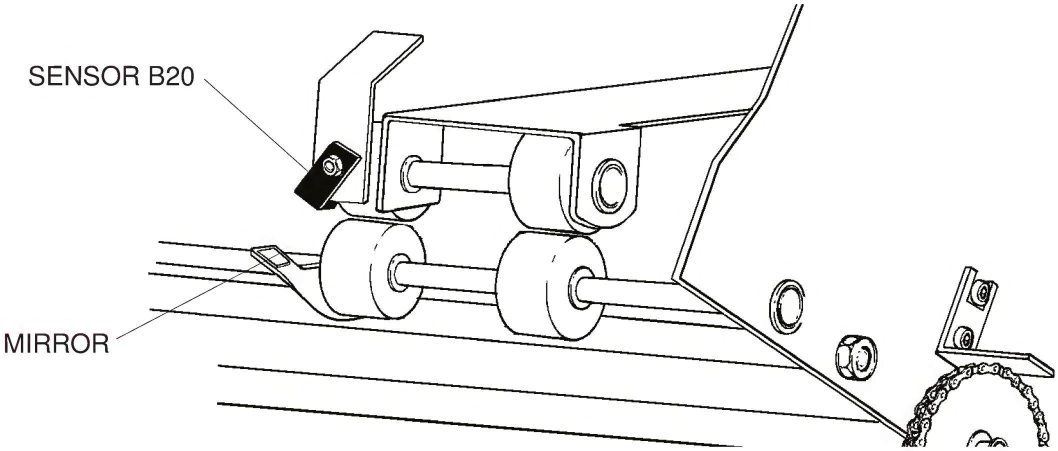
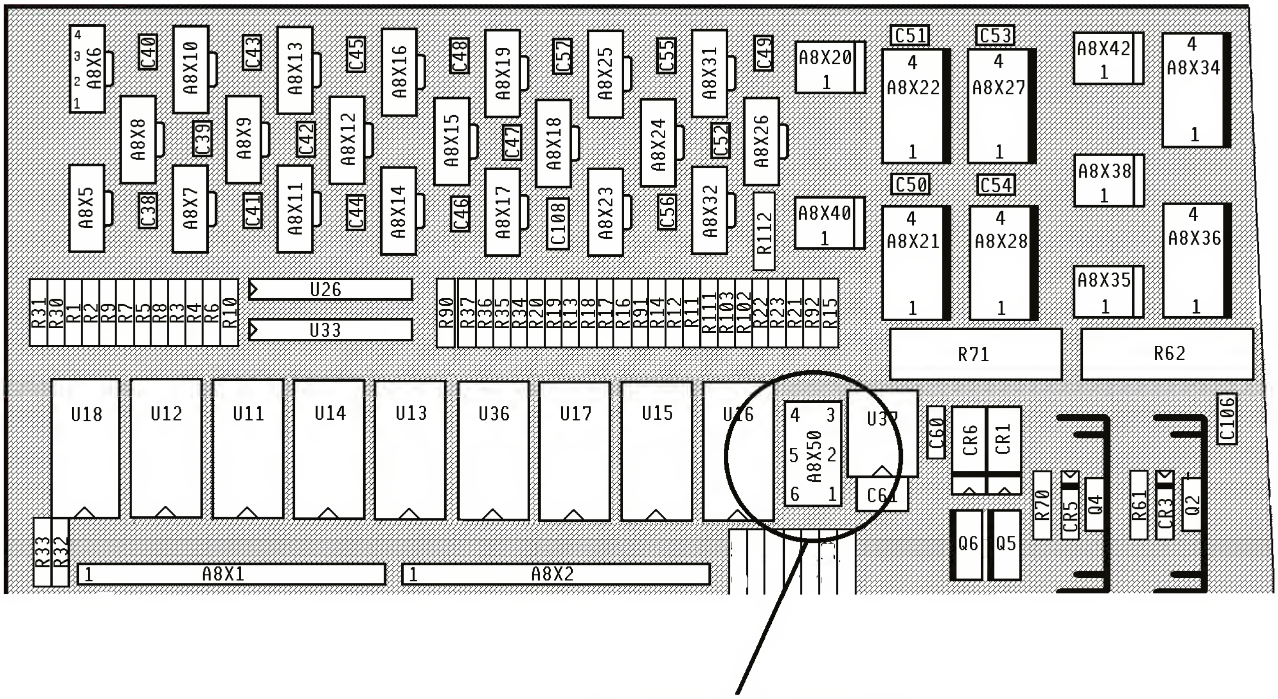


figure 3-30

Note

4. Set the JUMPER of A8X50 to the lower position (pin 1-6). SENSOR B20 must now be indicated as off when there is no FILM and it must be indicated as ON when there is a FILM. If this is not correct, go back to step 3 else proceed with step 5.


A8X6
C40
A8X10
C43
A8X13
C45
A8X16
C48
A8X19
C57
A8X25
C55
A8X31
C49
A8X20
C51
C53
A8X22
A8X27
A8X42
A8X34
A8X8
C39
A8X9
C42
A8X12
A8X15
C47
A8X18
A8X24
C52
A8X26
A8X38
A8X5
C38
A8X7
C41
A8X11
C44
A8X14
C46
A8X17
C108
A8X23
C56
A8X32
R112
A8X40
C50
C54
A8X21
A8X28
A8X36
A8X35
R31 R30 R1 R2 R9 R7 R5 R8 R3 R4 R6 R10
U26
U33
R90 R37 R36 R35 R34 R20 R19 R13 R18 R17 R16 R91 R14 R12 R11 R111 R103 R102 R22 R23 R21 R92 R15
R71
R62
U18
U12
U11
U14
U13
U36
U17
U15
U16
A8X50
U37
C61
C60
CR6
CR1
R70
CR5
Q4
R61
CR3
Q2
C106
Q6
Q5
R33 R32
A8X1
A8X2

NEW 6PIN CONNECTOR A8X50

JUMPER SETTING A8X50

DURING ADJUSTMENTS WITH SENSOR TEST

4---3 SENSOR B20=Off without FILM

NORMAL SETTING 5—2

6---1 SENSOR B20=On with FILM
=Off without FILM

figure 3-31

5. Set the JUMPER of A8X50 to the MIDDLE POSITION (pin 2-5). This is the position for normal operation.

6. Exit the the SERVICE PROGRAM.
   Press 3 times BACKSPACE
   Select LEAVE COMPONENT TEST .... press ENTER
   Select QUIT ML300 SERVICE MODE .... press ENTER
   Select Quit the program .... press ENTER

7. Run several cycles with all types of CUSTOMER FILMS to ensure correct operation.

DRIVE BELT TENSION

Purpose:

This adjustment ensures that the CASSETTE is correctly transported in and out.

1. Fix the REAR BELT TENSIONER in its uppermost position.

2. Move the FRONT BELT TENSIONER up or down, so that the left-hand and the right-hand BELTS are tensioned equally.

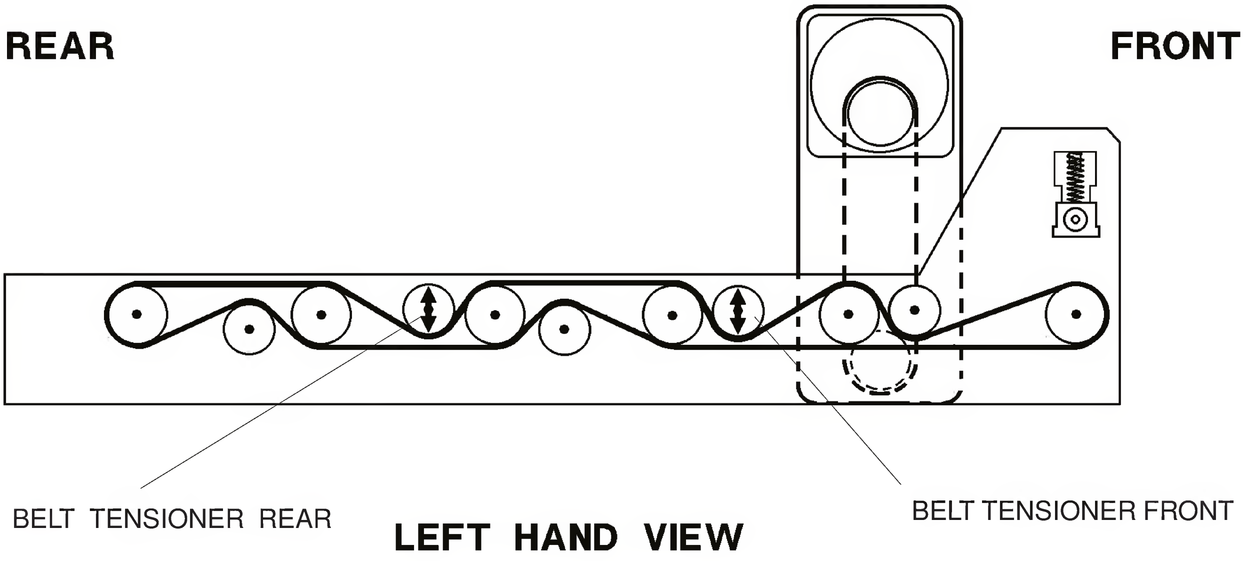


figure 3-32

FILM POCKET

HOW TO CLEAN THE SUCKERS

The main cause of SUCKER MARKS is contamination of the sucker surface. This contamination can be any number of substances ranging from natural body oil, sweat or even KODAK Intensifying Screen Cleaner and anti static Solution (which has sometimes been recommended for cleaning SUCKERS!). Do not use KODAK Intensifying Screen Cleaner and Anti Static Solution to clean the SUCKERS!

Note

This procedure should be followed if the SUCKERS are touched or if new ones are fitted.

1. Abrade the surface of the SUCKER carefully using Emery Cloth grade 400 or a similar material.

2. Lightly coat the SUCKER with NATURAL (un-perfumed) talcum powder, available from chemists and pharmacies.

FILM POCKET CHAIN

Prerequisites:

When doing this adjustment, the unit must be levelled.

Purpose:

This adjustment ensures that there is no offset between the left and the right CHAIN and that the FILM POCKET DRIVE SHAFT is parallel to the BASE PLATE of the MAGAZINE CHAMBER.

Note

After you did this adjustment, check the adjustment of the FILM POCKET

1. Switch off the ML300.

2. Take off the PANELS.

3. Rotate out the FILM CHUTE.

4. Take out all MAGAZINES.

5. Disconnect the STEPPER MOTOR M10 Connector A4X17.

6. Manually move FILM POCKET to a position so that the top surface of one of the counterweights is level with the top edge of the GUIDE RAIL.

7. Check that the second counterweight is also approx. level with the top of the GUIDE.

8. If necessary, move the CHAIN to the correct position on the GEAR.

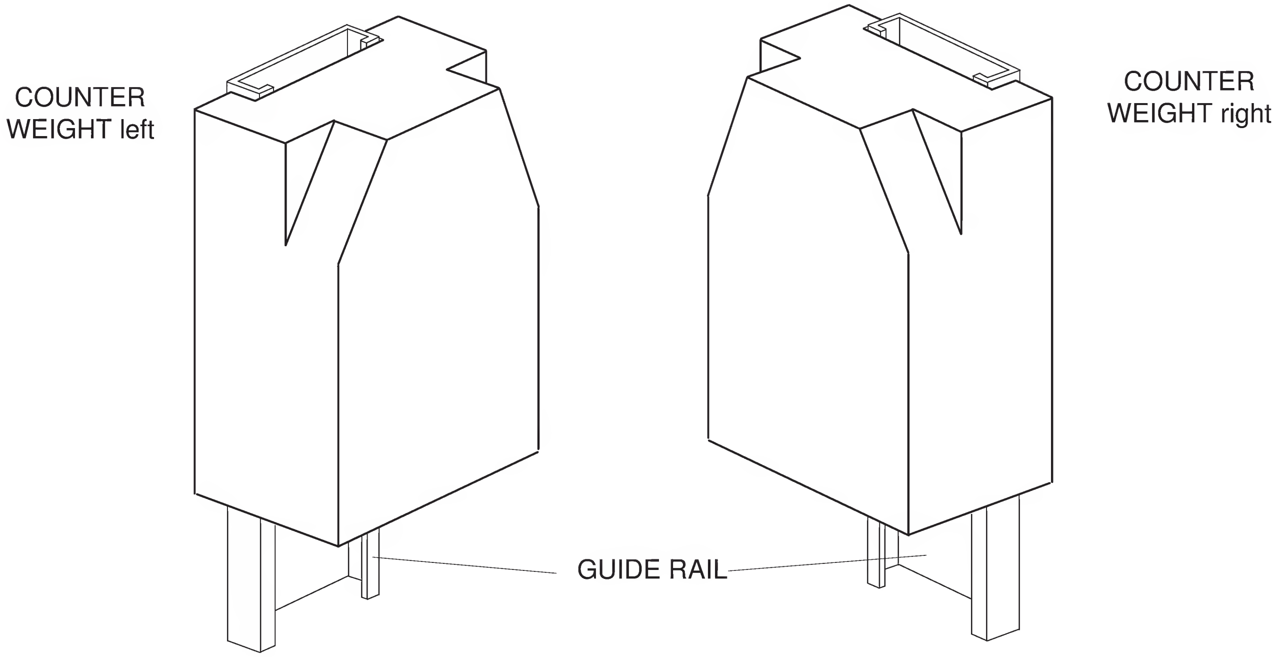


figure 3-33

Be careful not to damage the MAGAZINE SIZE PCB, when pushing in the CASSETTE.

Caution

9. Insert a large CASSETTE (min. 37 cm long) with the tube side up and the metal edge towards the FILM POCKET into magazine position 3. The CASSETTE is just used as a gauge.

10. Carefully move the FILM POCKET up above level 3.

11. Carefully rotate the FILM POCKET SUCKER BAR ARM into its fully upright position.

12. Switch on the ML300.

Do not leave the SOLENOID Y14 switched on for a long time. It becomes very hot.

13. Tilt the SOLENOID SUCKER BAR TILTING Y14.

Note

Start the SERVICE PROGRAM.
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU...................................... press ENTER
Select SOLENOIDS .... press ENTER
Select TILTING MAGAZINE SUCKER BAR Y14... press ENTER
Select ON

14. Manually move the FILM POCKET SUCKER BAR close to the CASSETTE in MAGAZINE POSITION 3.

15. Check that the 4 MAGAZINE SUCKERS are parallel to the metal edge of the CASSETTE. This is best seen from the front.

You cannot compensate with this adjustment for a bent FILM POCKET SUCKER BAR. Do this adjustment only if the complete FILM POCKET ASSEMBLY is not parallel to the CASSETTE.

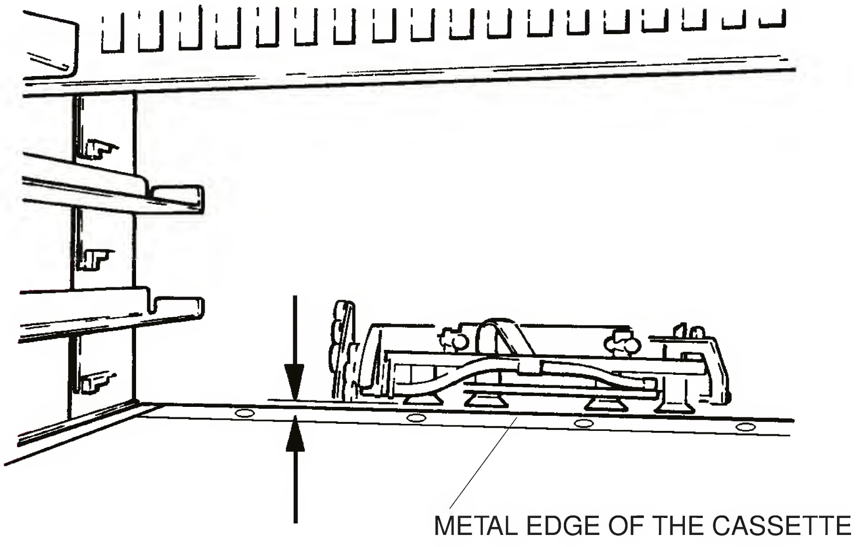


figure 3-34

Note

16. If they are not parallel loosen the CHAIN LOCK NUTS and lengthen or shorten the chain as required.

17. Tighten the LOCK NUTS, connect the FILM POCKET STEPPER MOTOR and take out the CASSETTE.

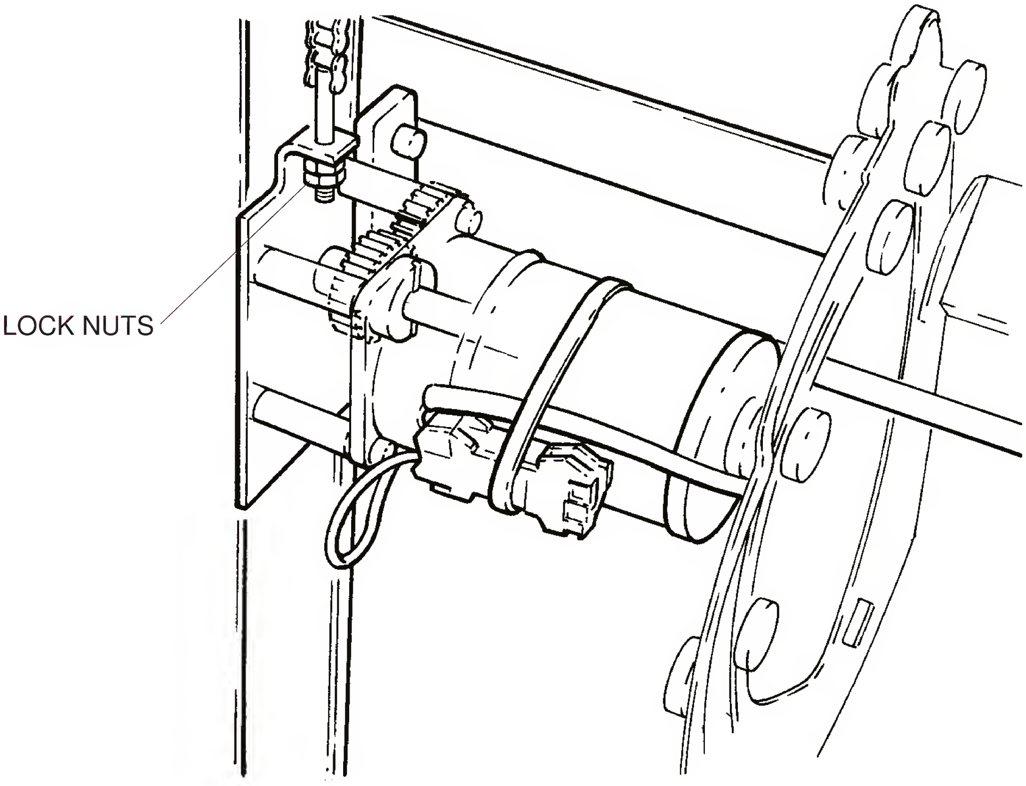


figure 3-35

FILM POCKET ADJUSTMENT

Special tools:

DENTIST MIRROR TL 2753
BLOWPIPE POSITIONER MAGAZINE TL-4582

Purpose:

This adjustment ensures that a FILM is picked up from the MAGAZINE.

1. Take out all MAGAZINES from the XML300.

2. Empty one MAGAZINE in the dark-room.

3. Take off the LID from the empty MAGAZINE.

4. Draw a reference line 3 mm away from the leading edge of a film.

5. Put this film into the empty MAGAZINE.

6. Make sure that the film is at the MAGAZINE WALL.

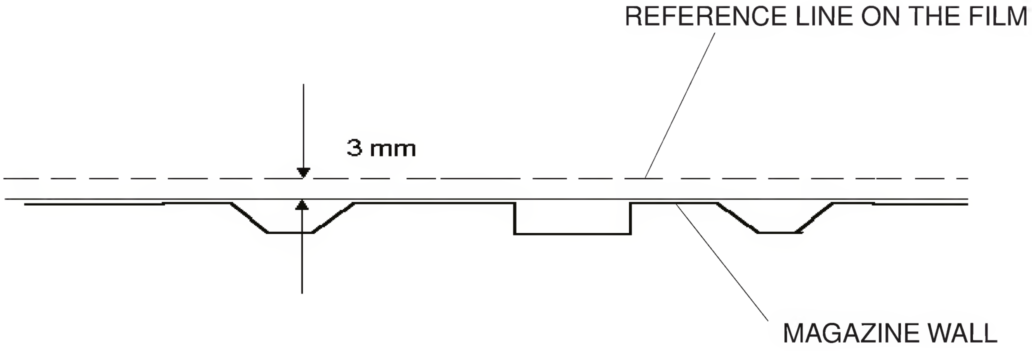


figure 3-36

7. Insert the prepared MAGAZINE into position 3.

8. Rotate out the FILM CHUTE.

9. Switch off the XML 300.

10. Pull the INTERLOCK OVERRIDE.

11. Connect the LAP TOP COMPUTER to the XML300 and start the SERVICE SOFTWARE.

12. Move the FILM POCKET to level 3.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU...................................... press ENTER
Select MAGAZINE MOTORS .... press ENTER
Select STEPPER MOTOR FILM POCKET M10.. press ENTER
Select MOVE TO LEVELS/HOME POSITION .... press ENTER
Select MOVE TO MAGAZINE 3

13. Rotate the FILM POCKET SUCKER BAR ARM to its vertical position, so that the BALL BEARING is fully engaged in the DETENT.

Press BACKSPACE twice to come back to the screen TEST MAGAZINE MOTORS
Select FILM PICK UP MAGAZINE M15.. press ENTER
Select FORWARD

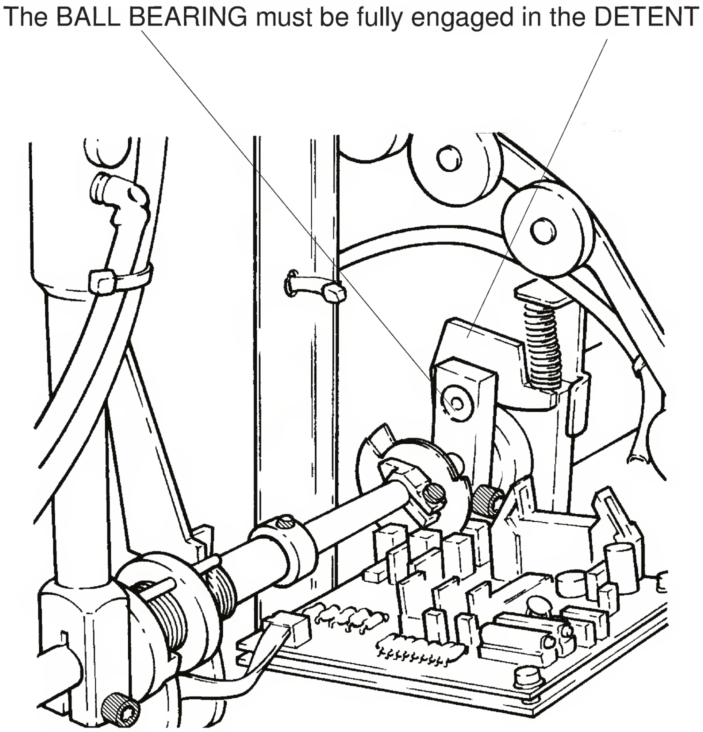


figure 3-37

14. Move the SUCKER BAR ARM by hand using low force. If it can be moved proceed with step 15 else proceed with step 24.

15. Start the SENSOR TEST.

Press BACKSPACE twice to go back to the screen COMPONENT TEST
Select SENSORS...press ENTER
Select SENSOR TEST WITH SOUND..press ENTER

16. Do the adjustment "MAGAZINE SUCKER BAR IN FRONT POSITION" of the FILM POCKET TIMING DISK starting with step 17.

17. Make sure that the BALL BEARING is engaged in the DETENT. See figure 3-37.

18. Loosen the SET SCREW of the LEFT TIMING DISK.

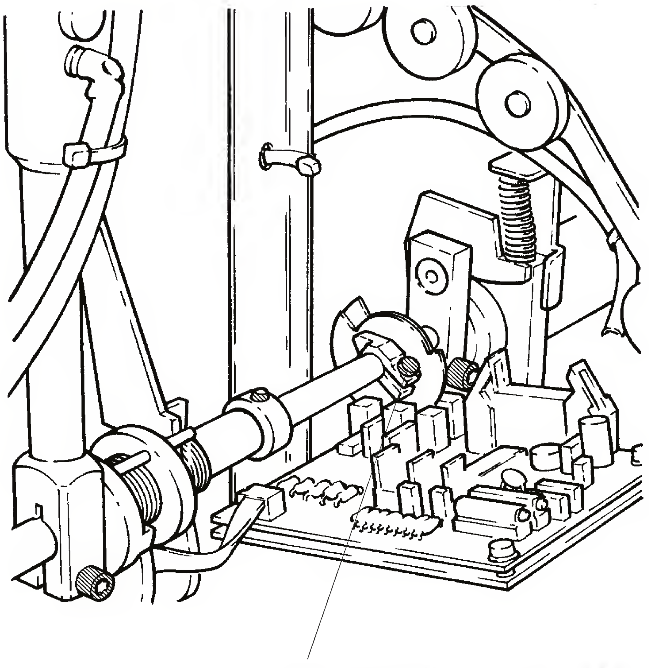


figure 3-38

19. Push the SUCKER BAR ARM forward by hand until there is no clearance.

20. Rotate the LEFT HAND TIMING DISK in the direction of the arrow (fig. 36) until the SENSOR B56/M_PU_EF is interrupted (on).

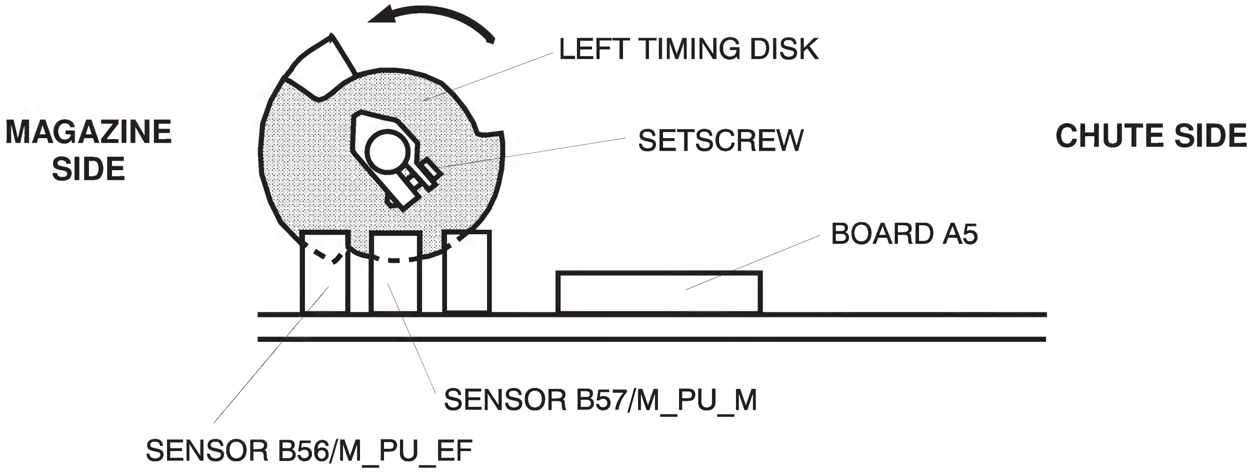


figure 3-39

21. Tighten the SET SCREW.

22. Check that the FILM POCKET SUCKER BAR reaches the FRONT POSITION without bouncing.

Press BACKSPACE twice to come back to the screen COMPONENT TEST
Select MAGAZINE MOTORS ....press ENTER
Select FILM PICK UP MAGAZINE M15...press ENTER
Select BACKWARD
Select FORWARD

23. If the BALL BEARING is not fully engaged in the DETENT or if the FILM POCKET SUCKER BAR does not stop without bouncing go back to step 20 else proceed with step 27.

24. Exit the SERVICE MODE.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST ....press ENTER
Select QUIT ML300 SERVICE MODE...press ENTER
Select Quit the program..press ENTER

25. Insert a MAGAZINE loaded with 35x43 TEST FILMS into the XML 300.

26. Run a few cycles; if the FILM does not interfere with parts of the CASSETTE TRANSPORT MODULE, proceed with step 36, else proceed with step 27.

27. Do the adjustment “MAGAZINE SUCKER BAR IN TRANSPORT POSITION” of the right-hand TIMING DISK.

28. Start the SENSOR TEST.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU...................................... press ENTER
Select SENSORS.. press ENTER
Select SENSOR TEST WITH SOUND... press ENTER

29. Up to SN 1421 manually rotate the SUCKER BAR ARM fully down beyond the vertical position.

From SN 1422 manually rotate the SUCKER BAR ARM fully down, until the BALL BEARING is fully engaged in the second DETENT.

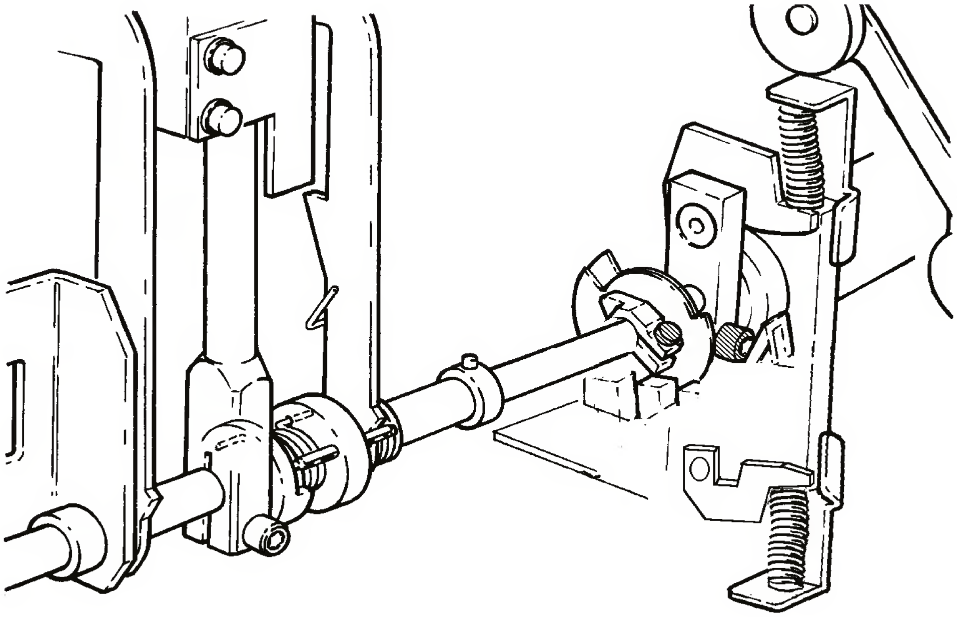


figure 3-40

30. Open the SET SCREW of the right hand TIMING DISK.

31. Turn the SUCKER BAR ARM backward by hand until there is no clearance.

32. Rotate the right hand TIMING DISK in the direction of the arrow until SENSOR B58/M_PU_ER is interrupted (on). This is indicated by a BEEP from the SENSOR TEST.

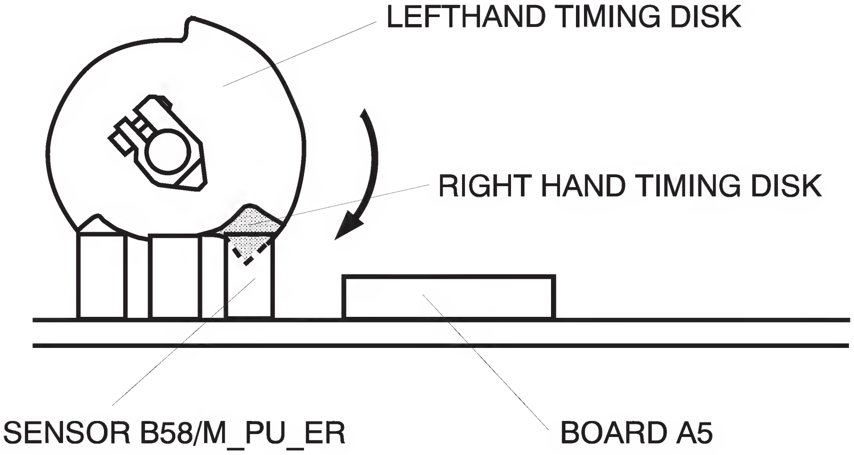


figure 3-41

33. Tighten the SET SCREW.

34. Check that the FILM POCKET SUCKER BAR reaches the REAR POSITION without bouncing.

Press BACKSPACE twice to come back to the screen COMPONENT TEST
Select MAGAZINE MOTORS .... press ENTER
Select FILM PICK UP MAGAZINE M15 .... press ENTER
Select FORWARD
Select BACKWARD

35. Run a few cycles; if the FILM does not interfere with parts of the CASSETTE TRANSPORT MODULE, proceed with step 36, else proceed with step 29.

36. Do the adjustments of the MAGAZINE SUCKERS and the FILM POCKET BLOW PIPES.

37. Move the FILM POCKET to MAGAZINE LEVEL 3

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER

UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select MAGAZINE MOTORS .... press ENTER
Select STEPPER MOTOR FILM POCKET M10 .... press ENTER
Select MOVE TO LEVELS/HOME POSITION .... press ENTER
Select MOVE TO MAGAZINE 3

38. After the FILM POCKET has reached LEVEL 3, rotate the FILM POCKET SUCKER BAR to its vertical position, so that the BALL BEARING is fully engaged in the DETENT.

Press BACKSPACE twice to come back to the screen COMPONENT TEST
Select MAGAZINE MOTORS .... press ENTER
Select FILM PICK UP MAGAZINE M15 .... press ENTER
Select FORWARD

39. Check that the CABLE PROTECTING BRACKET AT SENSOR B61 FILM AT SUCKER BAR is not bent. Otherwise the BRACKET will ride on the MAGAZINE WALL and the SUCKERS do not reach the FILMS in the MAGAZINE.

Do not energise the SOLENOID Y14 for too long. It will become very hot.

40. Move the FILM POCKET to the FILM in the MAGAZINE with the FILM POCKET SUCKER BAR tilted.

Press BACKSPACE twice to go back to the SCREEN COMPONENT TEST.
Select SOLENOIDS .... press ENTER
Select TILTING MAGAZINE SUCKER BAR Y14 .... press ENTER
Press BACKSPACE twice to go back to the SCREEN COMPONENT TEST.
Select MAGAZINE MOTORS .... press ENTER.
Select STEPPER MOTOR FILM POCKET M10 .... press ENTER.
Select MOVE TO A SPECIAL POSITION .... press ENTER.
Select POCKET TO FILM (MAG)

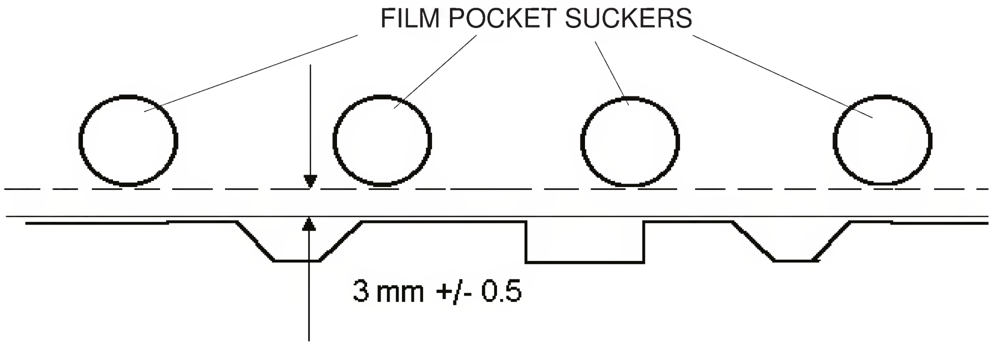


figure 3-42

41. Check that all SUCKERS are parallel on the FILM.

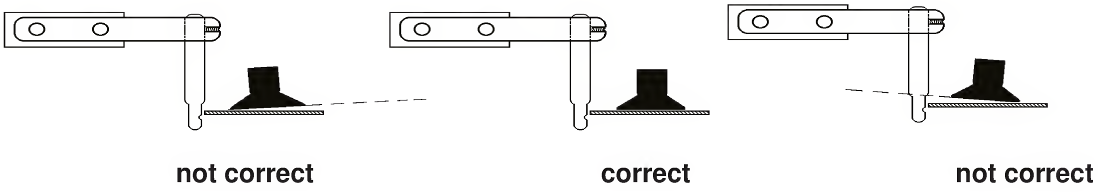

not correct
correct
not correct

figure 3-43

42. If the SUCKERS are not plane on the FILM proceed with step 43, else proceed with step 44.

Note

The SOLENOID Y14 is still energised.

43. Loosen the 2 MOUNTING SCREWS of the TILTING MAGAZINE SUCKER BAR SOLENOID Y14. Move the SOLENOID up or down as required and tighten the MOUNTING SCREWS.

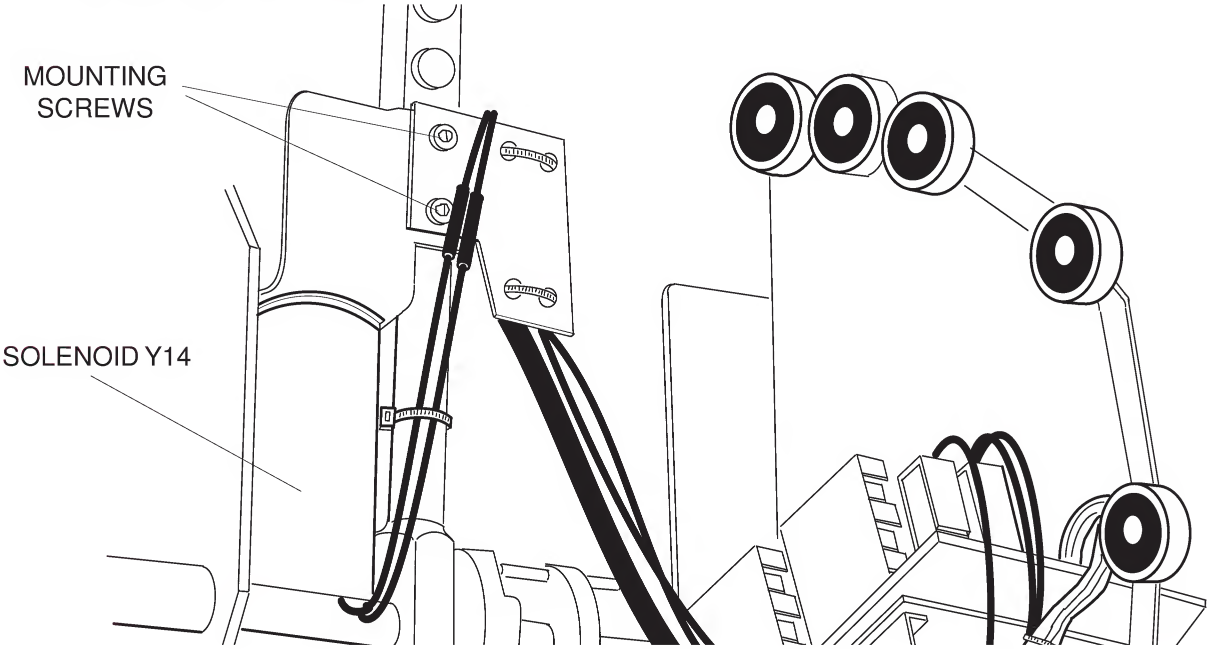

MOUNTING SCREWS
SOLENOID Y14

figure 3-44

44. Check that the MAGAZINE SUCKERS are 3 mm ± 0.5 away from the leading edge of the film. Use the DENTIST MIRROR to observe the position of the FILM POCKET SUCKERS. Make sure that the FILM is touching the MAGAZINE WALL.

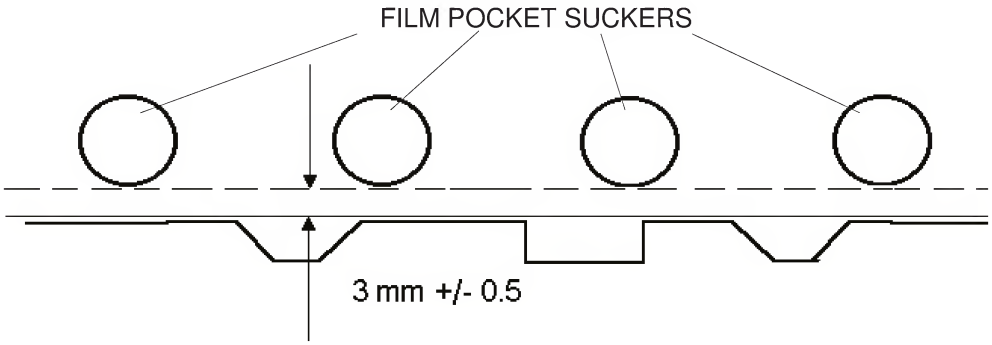


figure 3-45

45. If the distance is not correct, or if the MAGAZINE SUCKER BAR touches the MAGAZINE WALL proceed with step 46. Otherwise proceed with step 54.

46. Move the FILM POCKET up, so that it can be rotated out of the MAGAZINE.
Select MOVE OUT POSITION

47. Loosen SCREW 1 and rotate the SUCKER BAR in or out as required. **Tighten SCREW 1.**

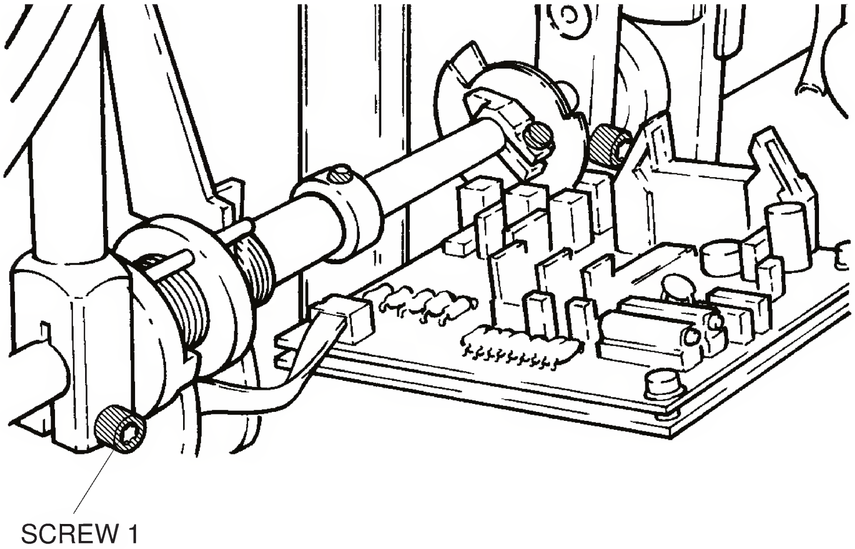


figure 3-46

48. Press Backspace until you reach the screen COMPONENT TEST.

49. Switch off the SOLENOID TILTING MAGAZINE SUCKER BAR Y14 to avoid overheating and let it cool down if necessary .

Press 3 times BACKSPACE
Select SOLENOIDS .... press ENTER
Select TILTING MAGAZINE SUCKER BAR Y14 .... press ENTER
Select SOLENOID OFF
Press BACKSPACE twice to go back to the screen COMPONENT TEST

50. Manually rotate the SUCKER BAR fully out.

51. To ensure that the FILM POCKET was not moved out of the correct position, do step 52.

52. Move the FILM POCKET to MAGAZINE LEVEL 3.

Select MAGAZINE MOTORS .... press ENTER
Select STEPPER MOTOR FILM POCKET M10 .... press ENTER
Select MOVE TO LEVELS/HOME POSITION .... press ENTER
Select MOVE TO MAGAZINE 3

53. Go back to step 38.

54. Switch off the SOLENOID TILTING MAGAZINE SUCKER BAR Y14 to avoid overheating and let it cool down if necessary .

Press 3 times BACKSPACE
Select SOLENOIDS .... press ENTER
Select TILTING MAGAZINE SUCKER BAR Y14 .... press ENTER
Select SOLENOID OFF

55. Check that the BLOW PIPES are not touching the side of the MAGAZINE RECESSES. The BLOW PIPES must not be in the shaded area.

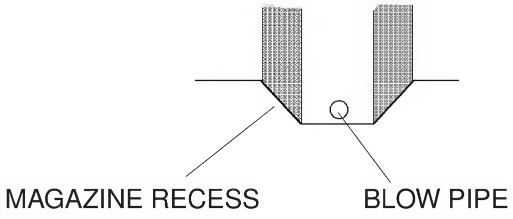


figure 3-47

Note

- If the SUCKER BAR ARM is too far to the left, SCREW 2 from the COLLAR has also to be loosened.
- Ensure that the position of the MAGAZINE SUCKER BAR in relation to the 3 mm reference line is not changed (see step 40).

56. If they are too far to the left or to the right, loosen SCREW 1 and carefully move the SUCKER BAR ARM in the desired direction. Make sure the SUCKER BAR does not interfere with the DOUBLE FILM DETECTOR.

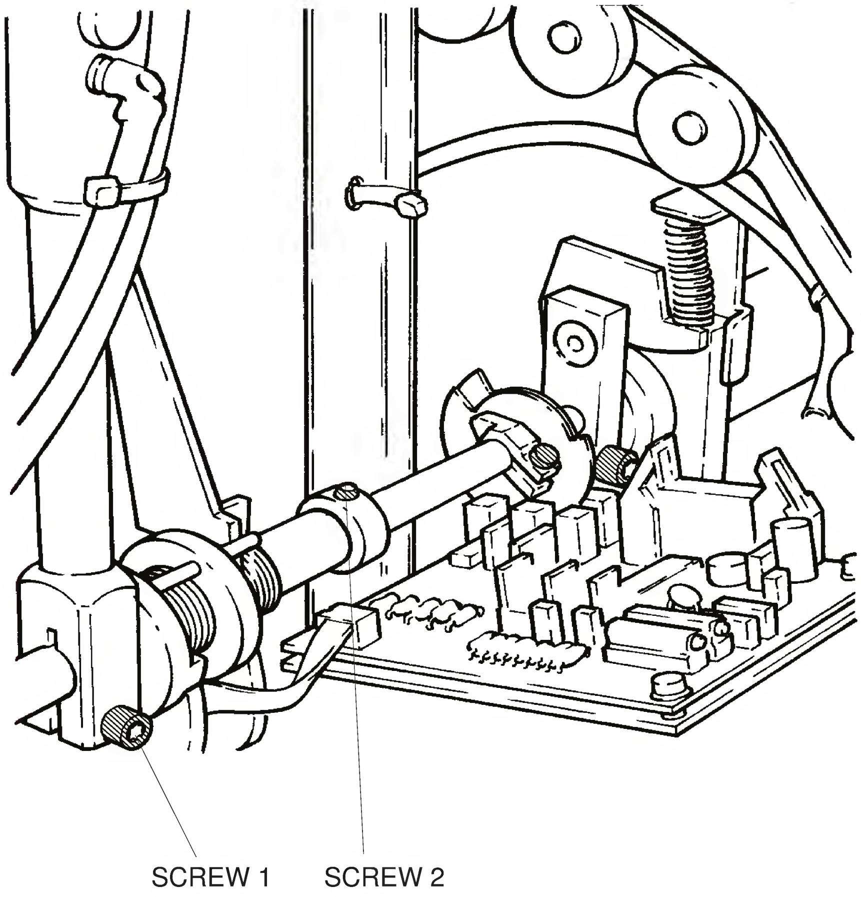


figure 3-48

Note

It is most important that SCREW 1 is tightened. If it is not tight, the relationship between the 2 FILM POCKET TIMING DISKS and the MAGAZINE SUCKER BAR will be lost. It is then impossible to pick up a film from the MAGAZINE.

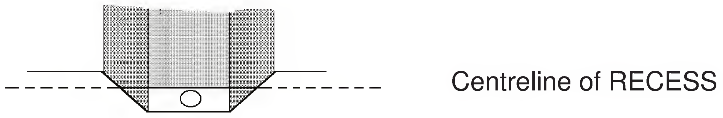
57. Tighten SCREW 1

58. Move the COLLAR with SCREW 2 to the left as far as possible and tighten SCREW 2. See figure 3-48.

Note

Do not tighten the LENGTH ADJUSTMENT SCREWS too much, otherwise they dig into the BLOWPIPES and a fine adjustment is no longer possible.

59. Check that the BLOWPIPES are correct in the MAGAZINE RECESSES. The BLOWPIPES must not be in the shaded areas. They have to be between the centreline of the recess and the MAGAZINE WALL. They must not touch the MAGAZINE WALLS. If this distance is not correct, loosen the LENGTH ADJUSTMENT SCREWS of the BLOWPIPES and shift them forward or backward. Tighten the screws.


Centreline of RECESS

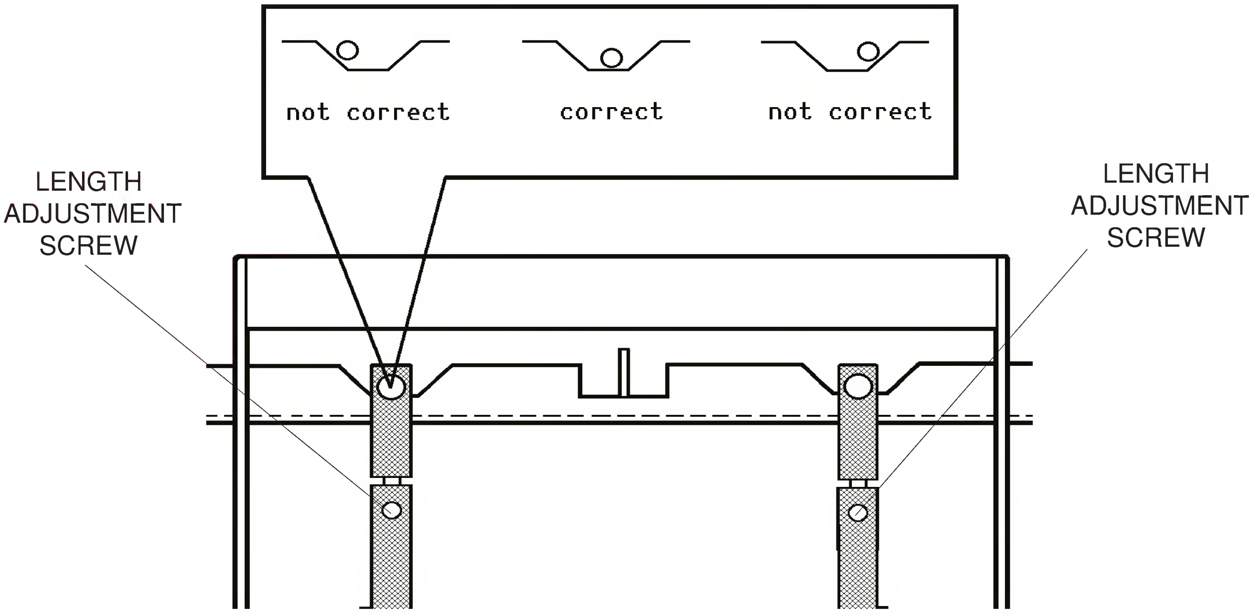

not correct
correct
not correct
LENGTH ADJUSTMENT SCREW
LENGTH ADJUSTMENT SCREW

figure 3-49

60. Manually rotate the FILM POCKET SUCKER BAR out of the MAGAZINE.

Note

Do not leave on the SOLENOID Y14 for too long. It will become very hot.

61. Test the position of the BLOW PIPE HOLES (SLITS in the old version) in relation to the FILM POCKET SUCKERS. To do this the COMPRESSOR must be switched on, SOLENOID VALVE Y12 must be energised and SOLENOID TILTING MAGAZINE SUCKER BAR Y14 must be switched on.

Press BACKSPACE twice to come back to the screen COMPONENT TEST
Select MAGAZINE MOTORS .... press ENTER
Select COMPRESSOR M16 .... press ENTER
Select MOTOR ON
Press BACKSPACE twice to come back to the screen COMPONENT TEST
Select SOLENOID VALVES .... press ENTER
Select MAGAZINE SUCKING Y12 .... press ENTER
Select SOL: VALVE ON .... press ENTER
Press BACKSPACE twice to come back to the screen COMPONENT TEST
Select SOLENOIDS .... press ENTER
Select TILTING MAGAZINE SUCKER BAR Y14 .... press ENTER
Select SOLENOID ON

62. Place the BLOWPIPE POSITIONER GAUGE TL 4582 onto the FILM POCKET SUCKERS.

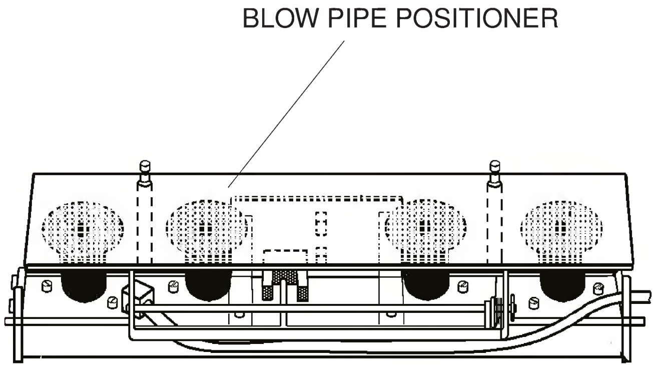


figure 3-50

63. Check that the 0.5mm HOLE (Slit before MOD 20) of the BLOWPIPES (Parts of MOD 20) is just above the BLOWPIPE POSITIONER.

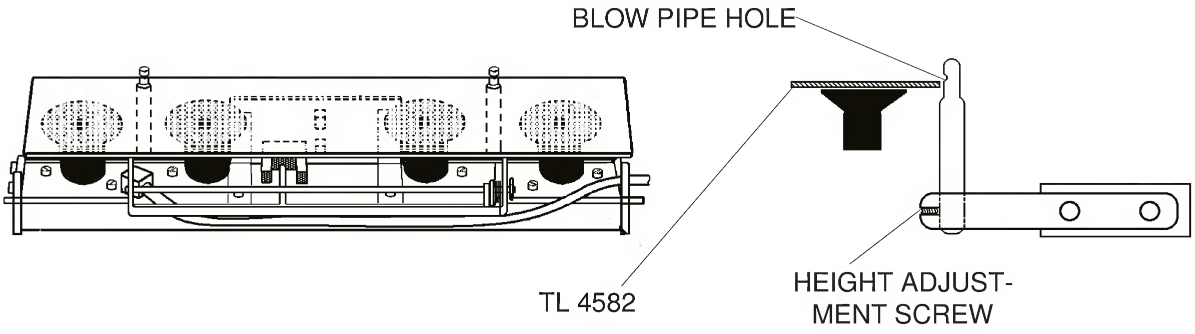


figure 3-51

Note

The position of the hole in the BLOWPIPES is important to separate the films in the MAGAZINES.

64. If the position of the HOLE is not correct, loosen the HEIGHT ADJUSTMENT SCREWS of the BLOWPIPES and move the BLOWPIPES up or down as required. Then fasten the SCREWS.

65. Switch off the SOLENOID Y14.

Select SOLENOID OFF

66. Remove the BLOW PIPE POSITIONER TOOL from the SUCKERS. The TOOL can only be taken off, after SOLENOID VALVE Y12 is switched off and air is blown into the SUCKERS.

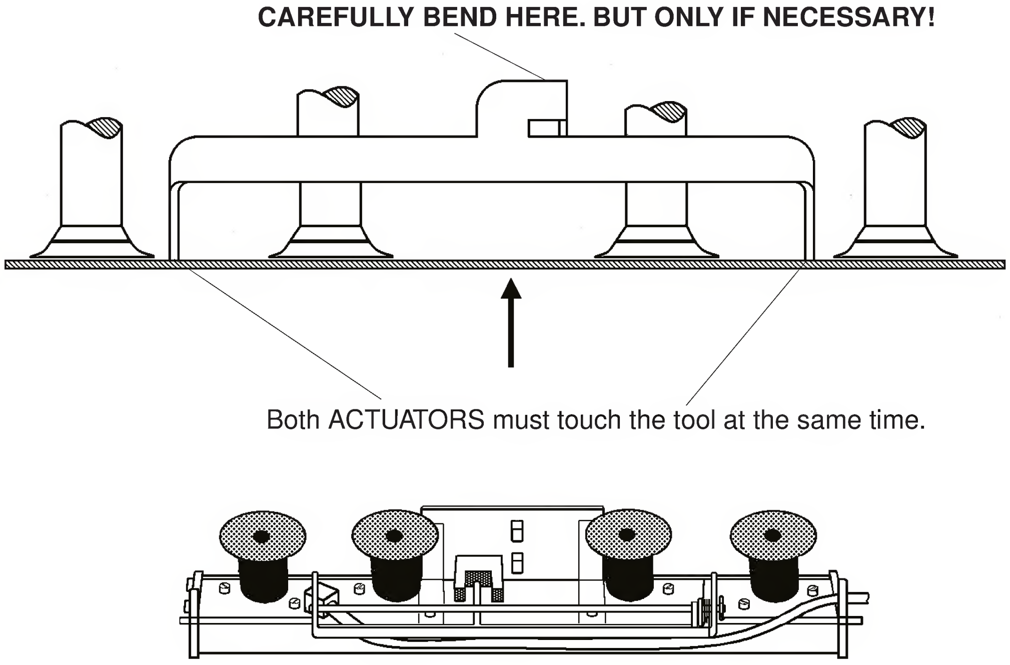
Press BACKSPACE twice to come back to the screen COMPONENT TEST
Select SOLENOID VALVES..press ENTER
Select MAGAZINE SUCKING Y12..................................press ENTER
Select SOL. VALVE OFF
Press BACKSPACE
Select MAGAZINE BLOW SUCKER Y10..............................press ENTER
Select SOL. VALVE ON
Select SOL. VALVE OFF
Press BACKSPACE twice to come back to the screen COMPONENT TEST
Select MAGAZINE MOTORS.......................................press ENTER
Select COMPRESSOR M16..Press ENTER
Select MOTOR OFF

67. To do the adjustment of the SENSOR B61, place the BLOW PIPE POSITION TOOL TL-4582 onto the MAGAZINE SUCKERS and start the SENSOR TEST.

Press BACKSPACE twice to come back to the screen COMPONENT TEST
Select SENSORS..press ENTER
Select SENSOR TEST WITH SOUND...press ENTER

68. Carefully press down the tool onto the SUCKERS. After 0.2 - 0.5 mm, SENSOR B61 should be actuated.

69. If the SENSOR is not actuated, carefully bend the ACTUATOR BRACKET.



CAREFULLY BEND HERE. BUT ONLY IF NECESSARY!

Both ACTUATORS must touch the tool at the same time.

figure 3-52

70. Exit the SENSOR TEST.

Press BACKSPACE twice to come back to the screen COMPONENT TEST

71. Insert an empty MAGAZINE into position 3.

72. Check that the BLOW PIPES have the correct distance to the MAGAZINE.

73. Check that there is a gap of 0 to 1mm between the BLOW PIPES and the MAGAZINE WALL.

Select MAGAZINE MOTORS .... press ENTER
Select STEPPER MOTOR FILM POCKET M10 .... press ENTER
Select MOVE TO LEVELS/HOME POSITION .... press ENTER
Select Move to MAGAZINE 3 .... START
Press BACKSPACE twice to come back to screen TEST MAGAZINE MOTORS
Select FILM PICK UP MAGAZINE M15 .... press ENTER
Select FORWARD

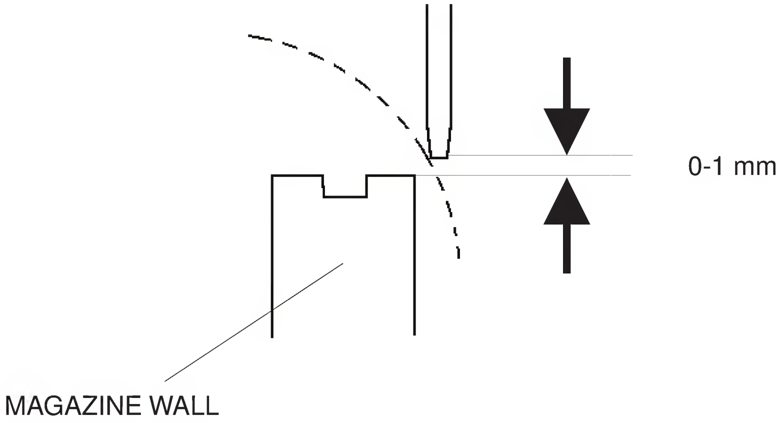


figure 3-53

74. If this distance is not correct, proceed with step 75 else proceed with step 79.

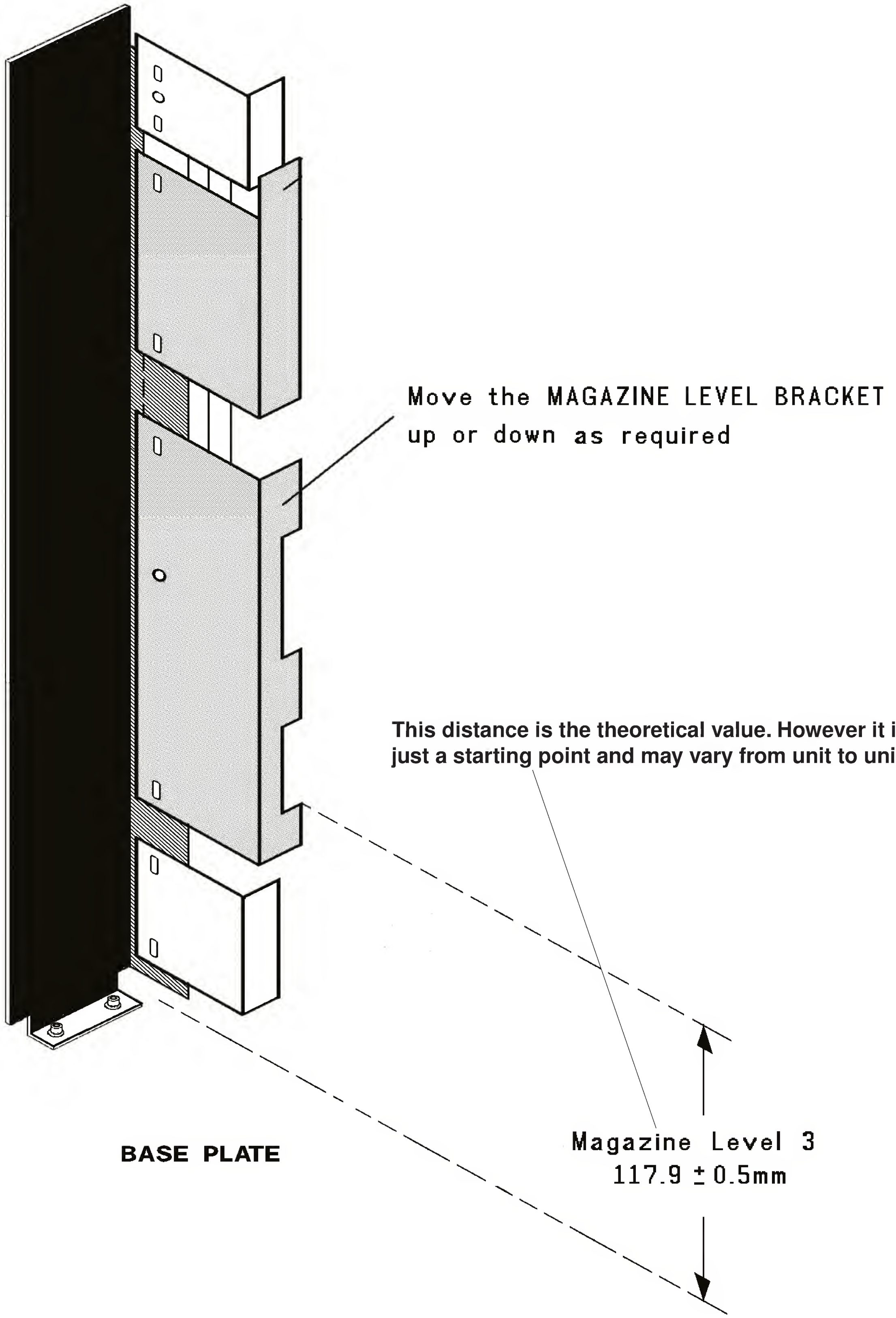
75. Rotate out the FILM POCKET SUCKER BAR.

Select BACKWARD

Note

The gap has to be correct. The distances given in the MAGAZINE LEVEL ADJUSTMENT are just a starting point.

76. Loosen the MOUNTING SCREWS of the MAGAZINE LEVEL BRACKET and move it up or down as required. Then fasten the MOUNTING SCREWS.


Move the MAGAZINE LEVEL BRACKET
up or down as required
BASE PLATE
Magazine Level 3
117.9 ± 0.5mm

This distance is the theoretical value. However it is just a starting point and may vary from unit to unit.

figure 3-54

77. Do a SCAN RUN.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select CHANGE ML300 DATA .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select SCAN RUN .... press ENTER
Select NEARLY EMPTY .... press ENTER
Select STORE PARAMETERS .... press ENTER
Select RETURN TO MAIN MENU .... press ENTER
Select COMPONENT TEST .... press ENTER
Select MAGAZINE MOTORS .... press ENTER

78. Proceed with step 81.

79. Rotate out the FILM POCKET SUCKER BAR.

Select BACKWARD .... press ENTER

80. Press Backspace to go back to the screen TEST MAGAZINE MOTORS.

81. Insert the MAGAZINE into position 1.

82. Check that the BLOWPIPES have the correct distance of 0-1 mm to the wall of MAGAZINE 1.

Select STEPPER MOTOR FILM POCKET M10 .... press ENTER
Select MOVE TO LEVELS/HOME POSITION .... press ENTER
Select Move to MAGAZINE 1 .... START
Press BACKSPACE twice to come back to screen TEST MAGAZINE MOTORS
Select FILM PICK UP MAGAZINE M15 .... press ENTER
Select FORWARD

Note

Find a compromise between MAGAZINE LEVEL 1 and 3.

83. If the distance is not correct, go back to step 75 and alter the MAGAZINE LEVEL ADJUSTMENT.

84. Rotate out the FILM POCKET SUCKER BAR.

Select BACKWARD

85. Exit the SERVICE PROGRAM.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

86. Put the FILM CHUTE in its correct position and fix it with all 4 SCREWS.

87. Run several cycles with X-OMAT CASSETTES and with VIDEO-FILM HOLDERS (if available).

88. Make sure that the MAGAZINE BLOWPIPES do not interfere with the CASSETTES.

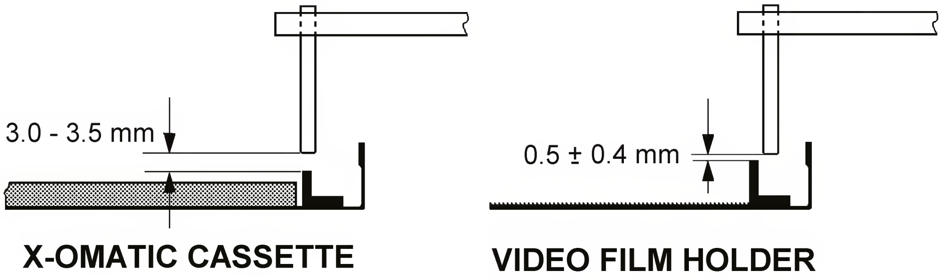


figure 3-55

Note

This adjustment is most important when OPERATING SOFTWARE VERSION 3.0 **AND** VIDEO FILM HOLDERS are used, because in this combination the parameter "LOWER FILM POCKET" is ignored. If it is not correct, the FILM may float out of the VHF.

89. If the distance is not as shown in the figure on the previous page, loosen the MOUNTING SCREWS of the CASSETTE LEVEL BRACKET and move it up or down as required. Then fasten the MOUNTING SCREWS.

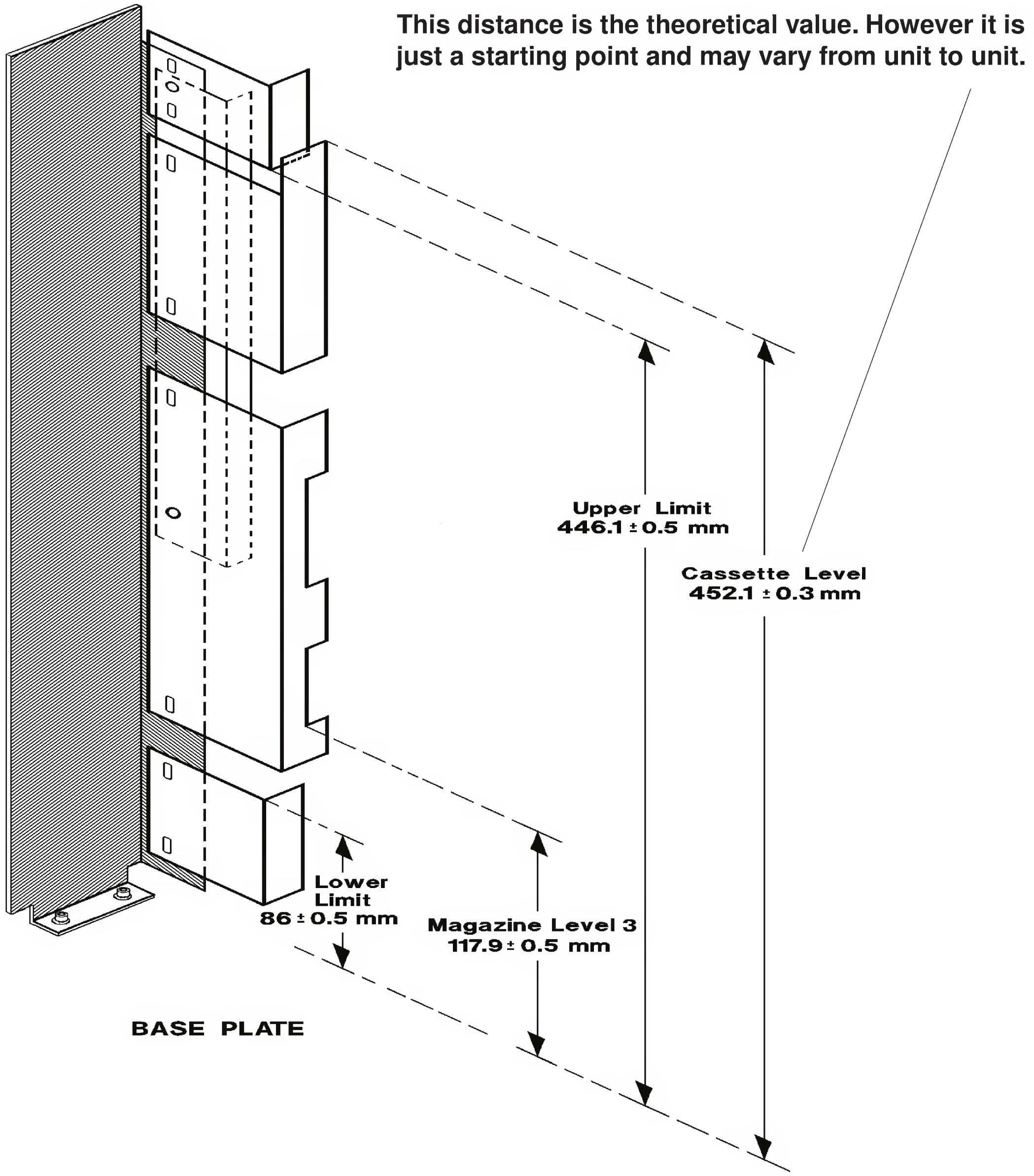

This distance is the theoretical value. However it is just a starting point and may vary from unit to unit.
Upper Limit
446.1 ± 0.5 mm
Cassette Level
452.1 ± 0.3 mm
Lower
Limit
86 ± 0.5 mm
Magazine Level 3
117.9 ± 0.5 mm
BASE PLATE

figure 3-56

Note

If the CASSETTE LEVEL is too high the FILM POCKET SUCKER BAR ARM touches the CENTRE ROLLER of the bottom TRANSPORT ROLLER in the CONVEYOR.

90. SENSOR B32/M_PO_PL MAGAZINE LEVEL must be actuated before SENSOR B31/M_PO_ES END SWITCH.

Disconnect CONNECTOR A4X17. This allows you to move the FILM POCKET manually up and down.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select SENSORS .... press ENTER
Select SENSOR TEST WITH SOUND .... press ENTER

91. Connect CONNECTOR A4X17.

92. Do a SCAN RUN.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select CHANGE ML300 DATA .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select SCAN RUN .... press ENTER
Select NEARLY EMPTY .... press ENTER
Select STORE PARAMETERS .... press ENTER
Select RETURN TO MAIN MENU .... press ENTER
Select COMPONENT TEST .... press ENTER
Select MAGAZINE MOTORS .... press ENTER

93. If Step 89 was not correct go back to step 87 else proceed with step 94.

94. Exit the SERVICE PROGRAM.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

95. Do a FUNCTION TEST

96. Enable the CONTINUOS LOOP MODE.

Move SWITCH S1-1 on PCB A1 to the ON (up) position.
Select FUNC at the OPERATORS DISPLAY
Select SYSTEM at the OPERATORS DISPLAY
Select CONTIN at the OPERATORS DISPLAY
Select CLEAR at the OPERATORS DISPLAY

97. Insert a MAGAZINE loaded with TEST FILMS.(use small and large film sizes)

98. Run approximately 30 cycles.

99. Watch the various movements of the FILM POCKET.

MAGAZINE EMPTY SENSOR

PURPOSE:

This adjustment makes sure that a MAGAZINE is recognised as being empty after the last FILM is removed.

1. Insert an empty MAGAZINE into position 1.

2. Open the MAGAZINE and rotate the FILM POCKET SUCKER BAR fully in.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU..................................... press ENTER
Select MAGAZINE MOTORS .... press ENTER
Select STEPPER MOTOR FILM POCKET M10... press ENTER
Select MOVE TO LEVELS/HOME POSITION .... press ENTER
Select MOVE TO MAGAZINE 1
Press BACKSPACE twice to come back to screen TEST MAGAZINE MOTORS
Select MAGAZINE OPENING M14.. press ENTER
Select FORWARD
Press BACKSPACE
Select FILM PICK UP MAGAZINE M15.. press ENTER
Select FORWARD

3 Look across the SENSOR MAGAZINE EMPTY, to the MIRROR and then to the REFLECTIVE STICKER in the MAGAZINE.

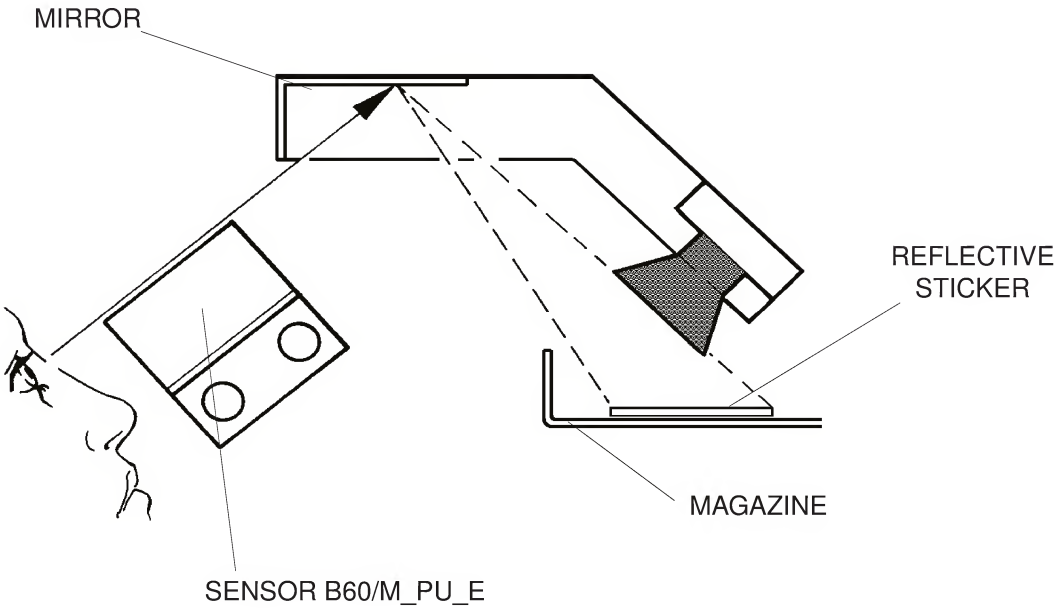


figure 3-57

4. If the REFLECTIVE STICKER is not visible open the MOUNTING SCREWS of SENSOR and move it up or down until the REFLECTIVE STICKER becomes visible. If necessary adjust the position of the MIRROR.

5. Tighten the SCREWS.

6. Start the SENSOR TEST. Otherwise the SENSOR MAGAZINE EMPTY is not turned on.

Press BACKSPACE twice to come back to screen COMPONENT TEST
Select SENSORS..press ENTER
Select SENSOR TEST WITH SOUND...press ENTER

Note

Do not set the gain too high. It might be possible that the INFRARED LIGHT BEAM is reflected by FILM in a MAGAZINE triggering the SENSOR and recognising the MAGAZINE as being empty.

7. Rotate the GAIN ADJUSTMENT SCREW of the SENSOR counter-clockwise until the indicator LED turns red. Now turn the GAIN ADJUSTMENT SCREW one step (20..30 degrees) clockwise until the INDICATOR LED is pulsating green.

8. Exit the SERVICE MODE.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

DOUBLE SHEET SENSOR SN < 3000

PURPOSE:

This adjustment makes sure that a DOUBLE FILM CONDITION is recognised.

SPECIAL TOOLS:

THICKNESS GAUGE TL 2372

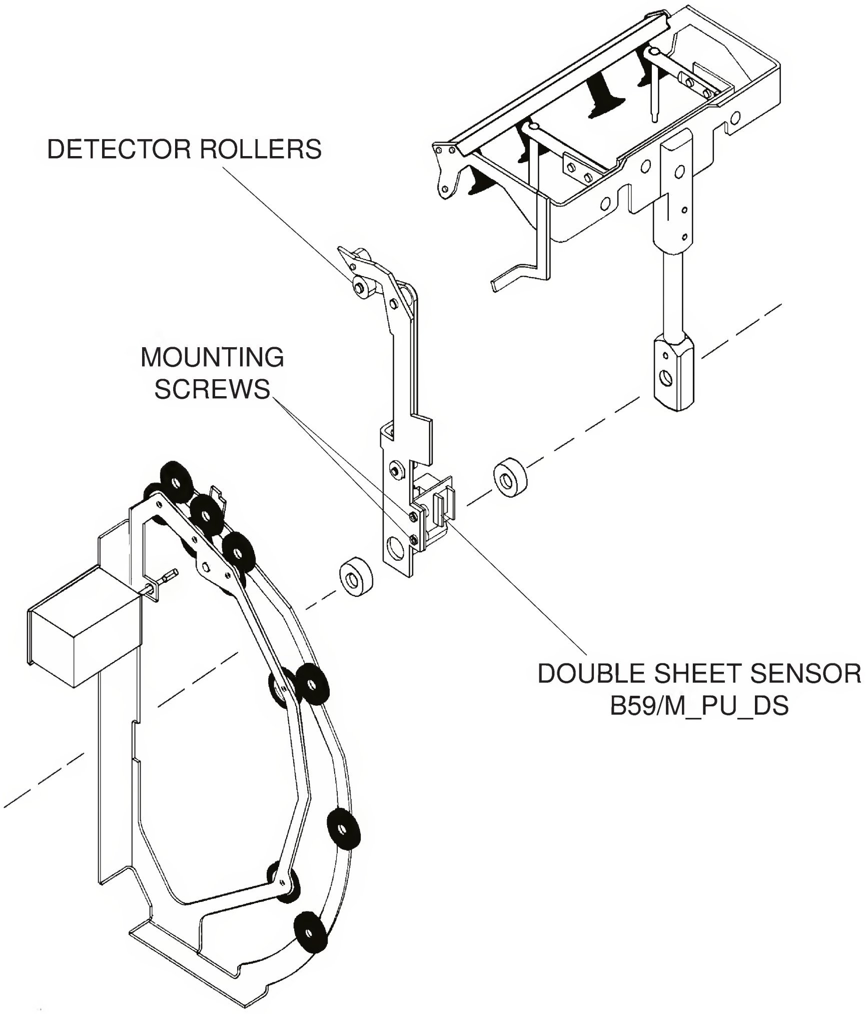

DETECTOR ROLLERS
MOUNTING SCREWS
DOUBLE SHEET SENSOR B59/M_PU_DS

figure 3-58

1. Start the SENSOR TEST.

   Start the SERVICE PROGRAM
   Select SERVICE MODE from the GLOBAL MENU .... press ENTER
   ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
   UNIT DATA are displayed .... press ENTER
   Select COMPONENT TEST from the MAIN MENU .... press ENTER
   Select SENSORS .... press ENTER
   Select SENSOR TEST WITH SOUND .... press ENTER

2. Loosen the 2 MOUNTING SCREWS Of the DOUBLE SHEET SENSOR B59/M_PU_DS.

3. Put FEELER GAUGE 0.3mm (0.012inches) between the DETECTOR ROLLERS.

4. Move the DOUBLE SHEET SENSOR until it is activated.

5. Fasten the MOUNTING SCREWS.

6. Check with GAUGE LEAVE 0.25mm (0.01inches) that the DOUBLE SHEET SENSOR is not actuated.

7. If necessary repeat step 3, 4 ,5 and 6.

8. Exit the SERVICE MODE.

   Press 3 times BACKSPACE
   Select LEAVE COMPONENT TEST .... press ENTER
   Select QUIT ML300 SERVICE MODE .... press ENTER
   Select Quit the program .... press ENTER

DOUBLE SHEET SENSOR SN > 3000

Note

Starting with SN > 3000 the DOUBLE SHEET DETECTOR can discriminate between:

no FILM
1 FILM
2 or more FILMS

This discrimination is accomplished by a change in the mechanics and by the OPERATING SOFTWARE >= 3.31.

FUNCTIONAL DESCRIPTION

If there are 2 or more FILMS between the DETECTOR ROLLERS the path of light in SENSOR B59 is interrupted by AREA 2 of the DOUBLE SHEET SENSOR ARM.

If there is 1 FILM between the DETECTOR ROLLERS the light passes through the SLOT in the DOUBLE FILM SENSOR ARM. During the adjustment this slot must be positioned precisely over the light beam of the SENSOR B59.

If there is no FILM between the DETECTOR ROLLERS the path of light in SENSOR B59 is interrupted by AREA 1 of the DOUBLE SHEET SENSOR ARM.

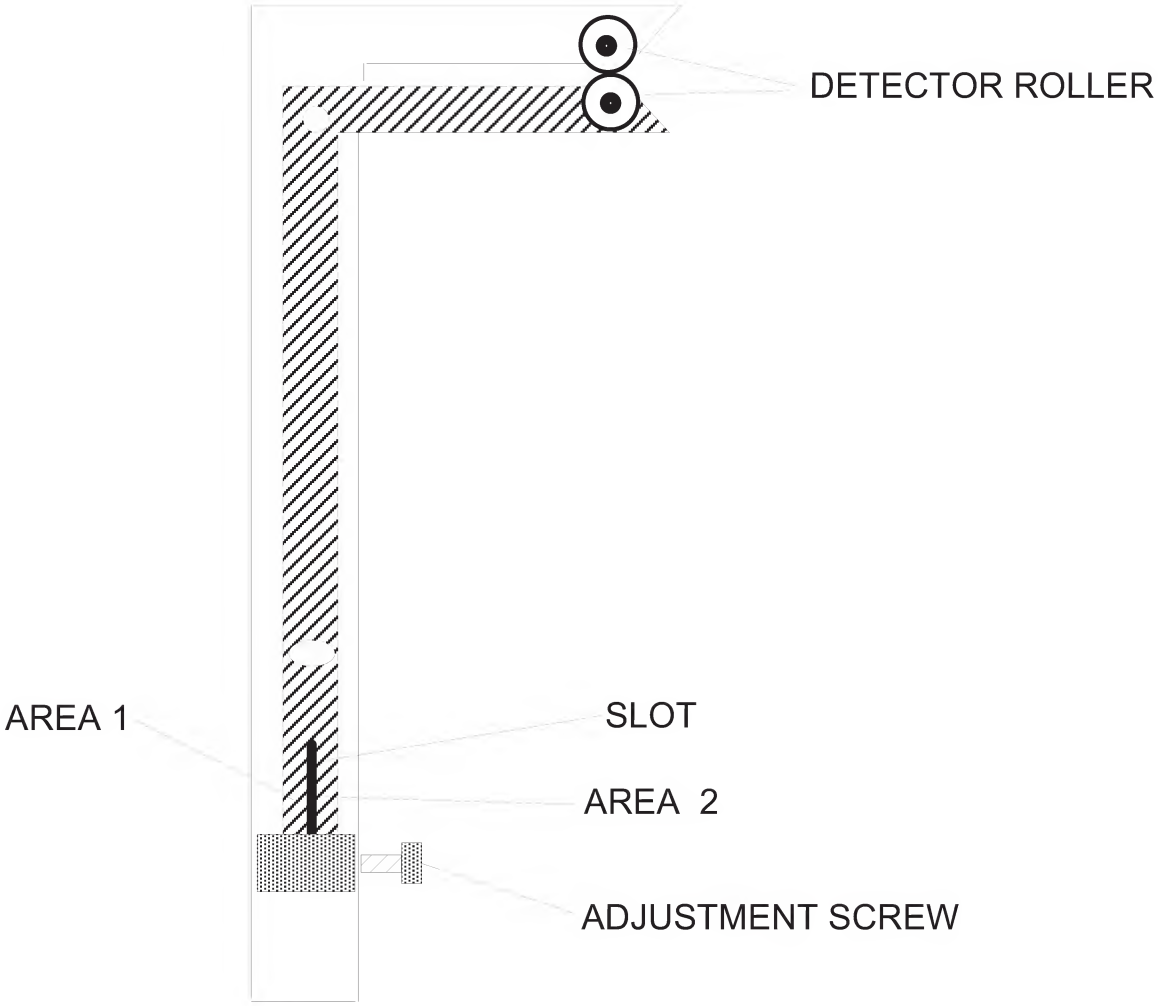

DETECTOR ROLLER
AREA 1
SLOT
AREA 2
ADJUSTMENT SCREW

figure 3-59

Note

Do this adjustment in case of false DOUBLE SHEET DETECTION only.

PURPOSE:	To ensure that only 1 FILM is picked up from the MAGAZINE.
SPECIAL TOOLS:	DIGITAL VOLTMETER TEST LEAD TIPS TL 2095 (or similar)

Caution

Do not enable the INTERLOCK OVERRIDE SWITCH. The MOTORS must not run during this adjustment procedure.

1. Take of the REAR PANEL of the ML300.

2. Rotate out the FILM CHUTE to get access to the FILM POCKET AREA.

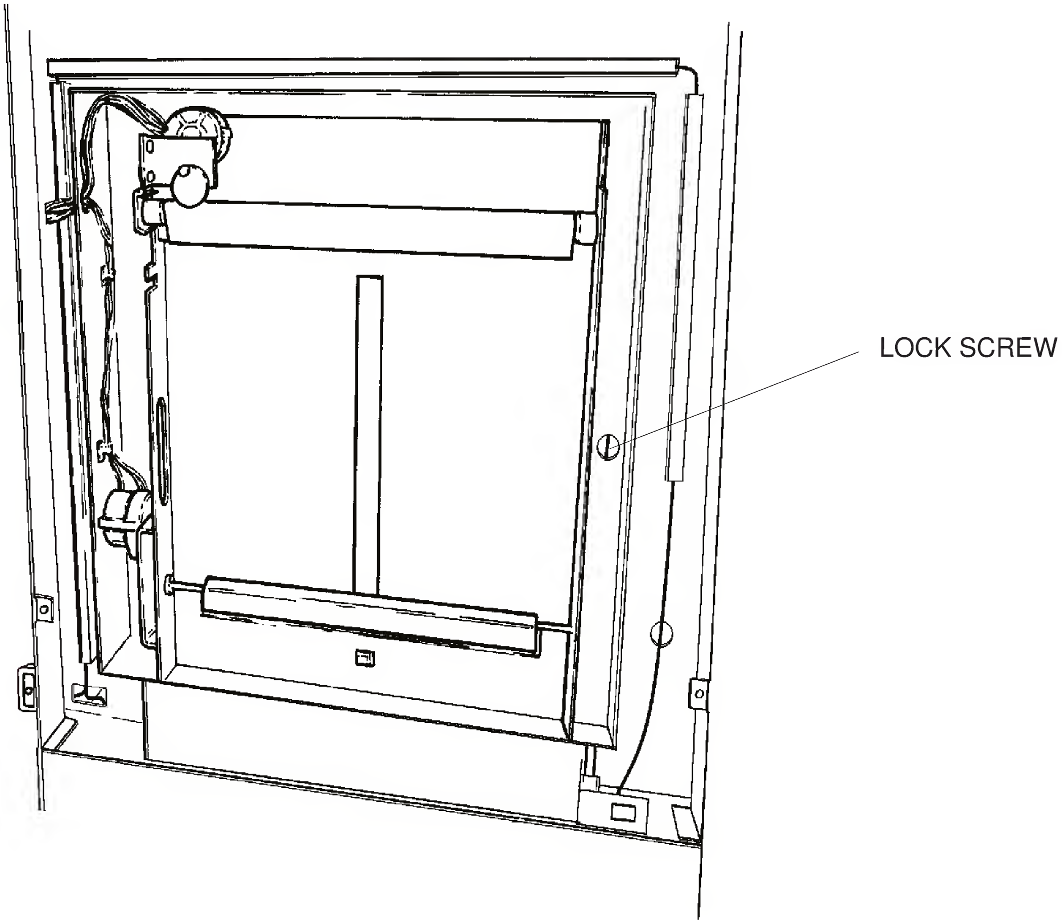
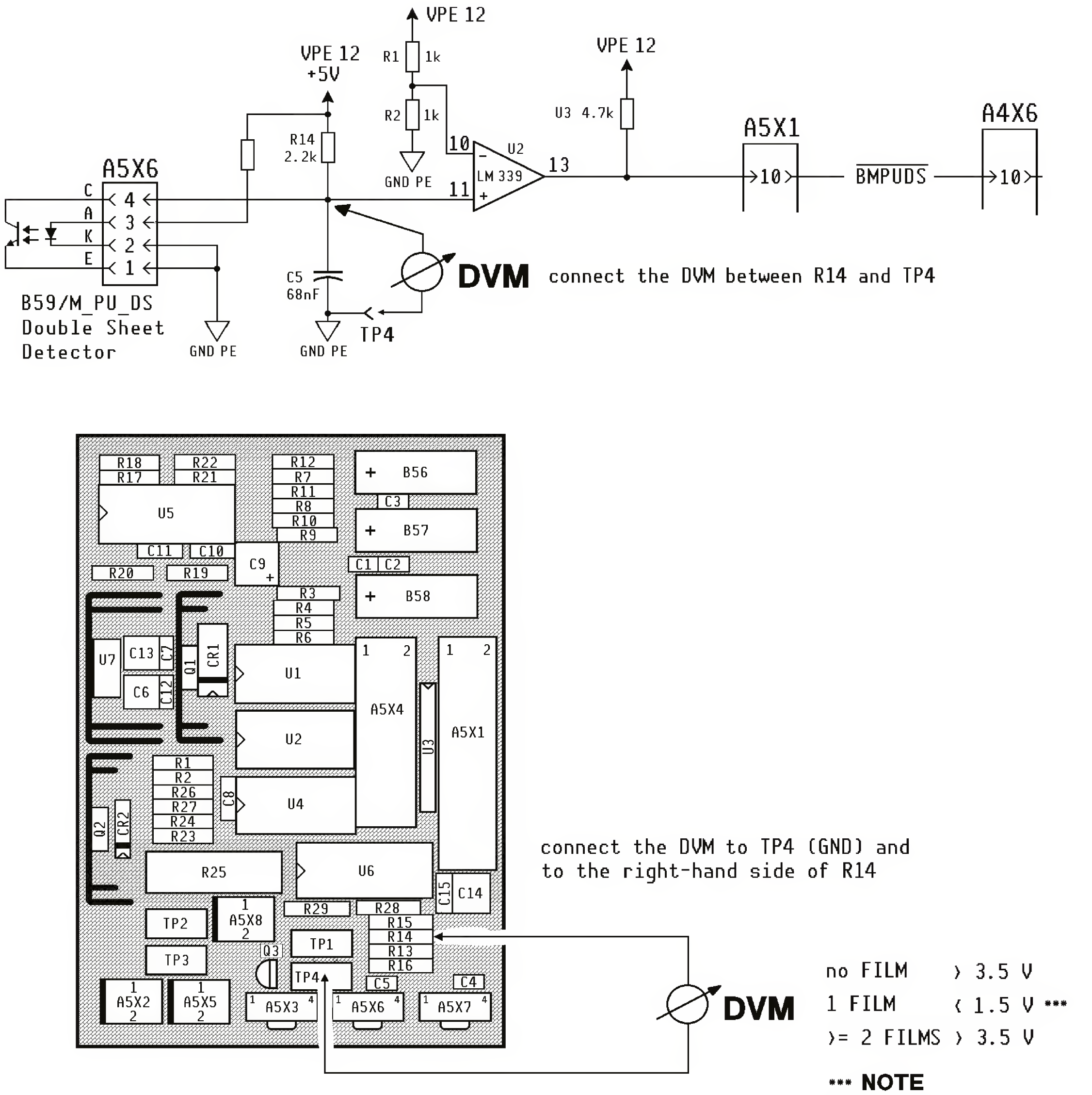


figure 3-60

3. Connect the DVM to TP4 (GND) and to the right-hand side of RESISTOR R14 (both on PCB A5). Use TEST LEAD TIPS TL 2095 (or similar).


VPE 12
VPE 12
+5V
R1 1k
R2 1k
GND PE
VPE 12
U3 4.7k
A5X1
A4X6
R14
2.2k
10
11
U2
LM 339
13
>10>
BMPUDS
>10>
A5X6
C
A
K
E
4
3
2
1
B59/M_PU_DS
Double Sheet
Detector
GND PE
C5
68nF
GND PE
TP4
DVM
R18
R17
R22
R21
R12
R7
R11
R8
R10
R9
B56
C3
B57
U5
C11
C10
C9
C1
C2
R20
R19
R3
R4
R5
R6
B58
U7
C13
C7
Q1
CR1
U1
C6
C12
A5X4
A5X1
U2
U3
R1
R2
R26
R27
R24
R23
C8
U4
Q2
CR2
R25
U6
C15
C14
TP2
A5X8
R29
R28
R15
R14
R13
R16
TP1
TP3
Q3
TP4
C5
C4
A5X2
A5X5
A5X3
A5X6
A5X7
DVM

connect the DVM between R14 and TP4

connect the DVM to TP4 (GND) and to the right-hand side of R14

no FILM	> 3.5 V
1 FILM	< 1.5 V ***
>= 2 FILMS	> 3.5 V

***** NOTE**

The DOUBLE FILM SENSOR will work if the voltage for 1 FILM is < 1.5 V. However adjust it to < 0.5 V as stated in the FLOW CHART.

figure 3-61

4. Rotate out the MAGAZINE SUCKER BAR to get better access to the DOUBLE SHEET SENSOR B59.

Caution

The ADJUSTMENT SCREW must not be turned while the SENSOR MOUNTING SCREWS are tight.

5. Do the ADJUSTMENT.

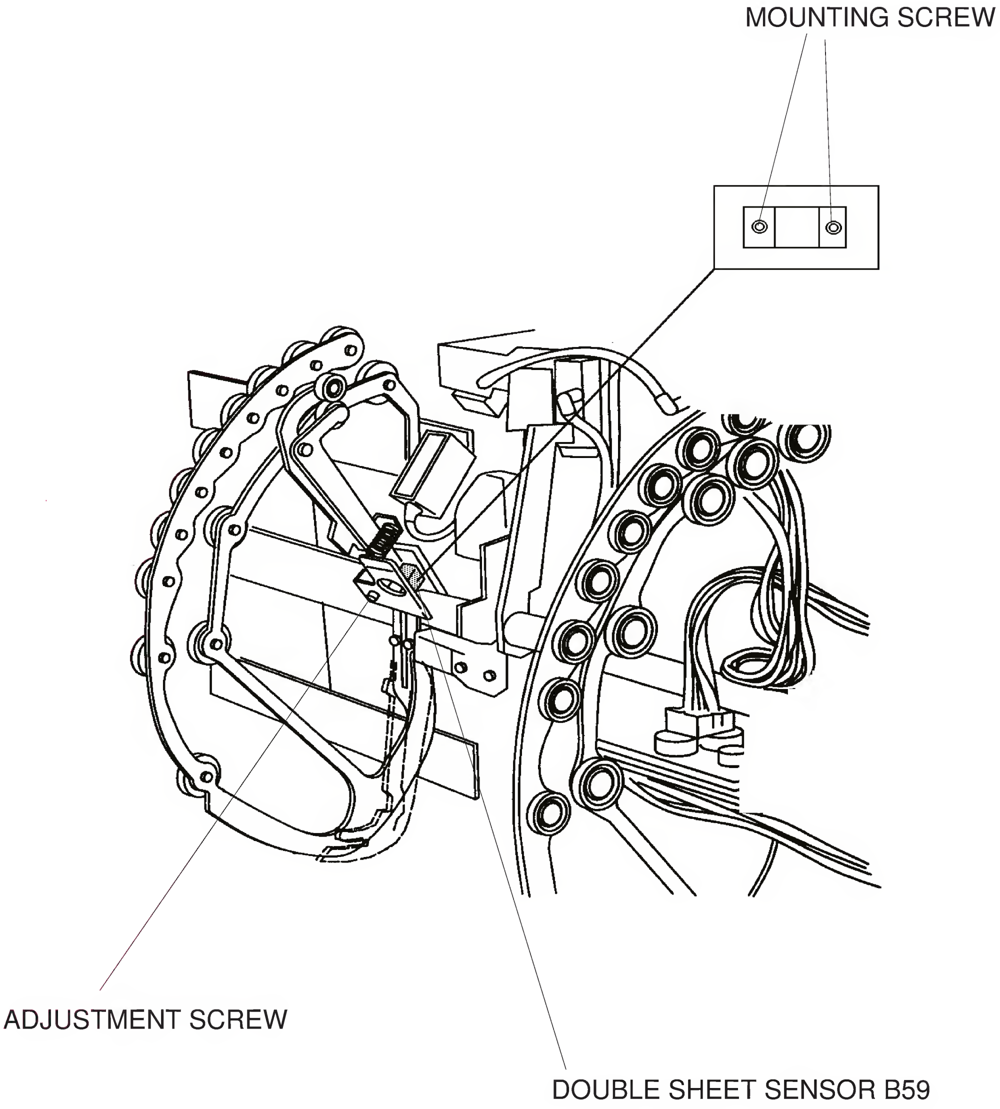
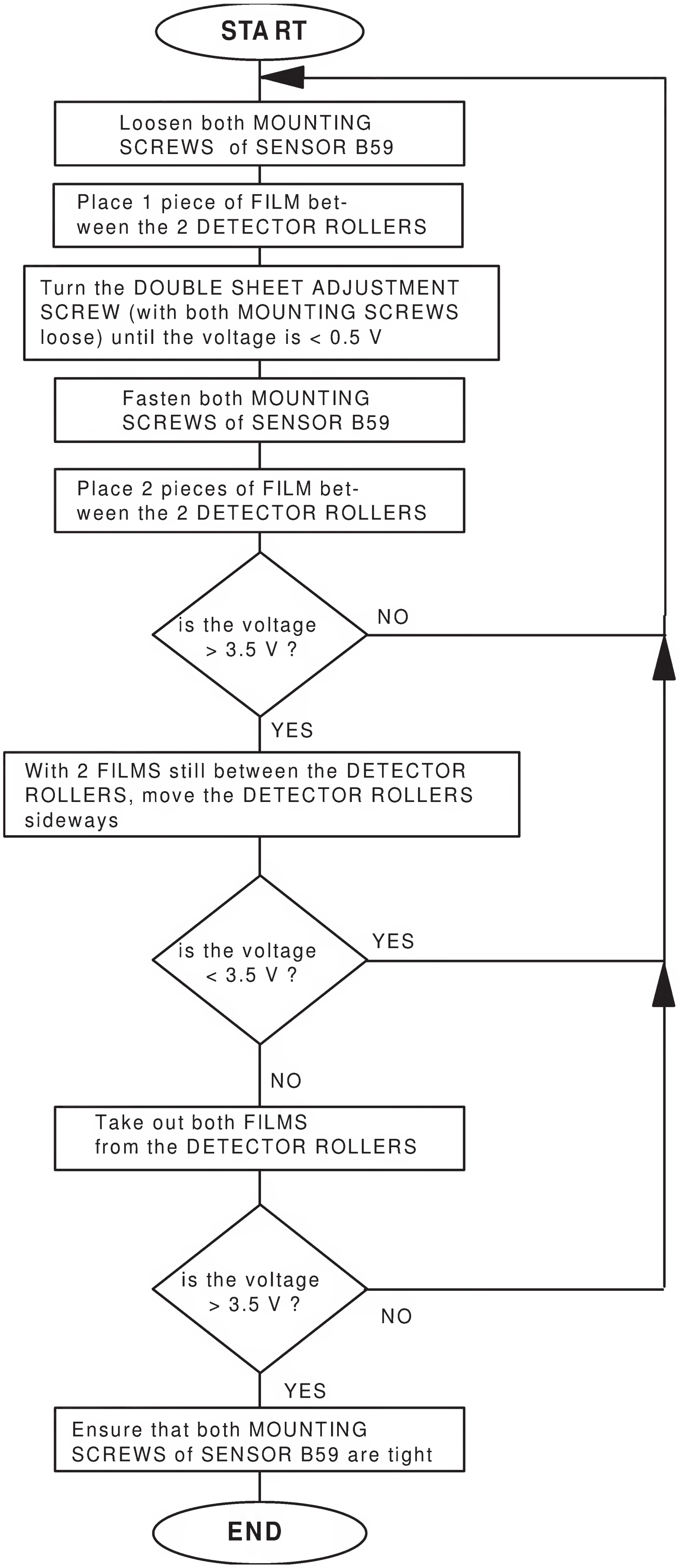

MOUNTING SCREW
ADJUSTMENT SCREW
DOUBLE SHEET SENSOR B59

figure 3-62


START
Loosen both MOUNTING SCREWS of SENSOR B59
Place 1 piece of FILM between the 2 DETECTOR ROLLERS
Turn the DOUBLE SHEET ADJUSTMENT SCREW (with both MOUNTING SCREWS loose) until the voltage is < 0.5 V
Fasten both MOUNTING SCREWS of SENSOR B59
Place 2 pieces of FILM between the 2 DETECTOR ROLLERS
is the voltage > 3.5 V ?
NO
YES
With 2 FILMS still between the DETECTOR ROLLERS, move the DETECTOR ROLLERS sideways
is the voltage < 3.5 V ?
YES
NO
Take out both FILMS from the DETECTOR ROLLERS
is the voltage > 3.5 V ?
NO
YES
Ensure that both MOUNTING SCREWS of SENSOR B59 are tight
END

6. Close the FILM CHUTE and tighten the LOCK NUT.

7. Mount the REAR PANEL.

8. Run a few cycles with various cassette sizes to ensure proper operation.

MAGAZINE LEVELS

PURPOSE:

This adjustment makes sure that the FILM POCKET SUCKER BAR rotates freely into the MAGAZINES and into the CASSETTE. UPPER/LOWER LIMIT can be adjusted too.

Note

This adjustment is just a starting point. After it is performed the FILM POCKET ADJUSTMENT must be checked and if necessary the position of the MAGAZINE LEVEL BRACKET and the CASSETTE LEVEL BRACKET must be changed.

1. Loosen the MOUNTING SCREWS of the MAGAZINE LEVEL BRACKET.

2. Set the edge of MAGAZINE LEVEL 3 to a distance of 117.9 ±0.5 mm to the BASE PLATE.

3. Fasten the MOUNTING SCREWS.

4. Loosen the MOUNTING SCREWS of the CASSETTE LEVEL BRACKET.

5. Set the edge of CASSETTE LEVEL to a distance of 452.1 ±0.3 mm from the BASE PLATE.

6. Fasten the MOUNTING SCREWS.

7. Loosen the MOUNTING SCREWS of the UPPER LIMIT BRACKET.

Note

The UPPER LIMIT BRACKET has to be below the CASSETTE LEVEL BRACKET.

8. Set the edge of UPPER LIMIT to a distance of 446.1 ±0.5 mm from the BASE PLATE.

9. Fasten the MOUNTING SCREWS.

10. Loosen the MOUNTING SCREWS of the LOWER LIMIT BRACKET.

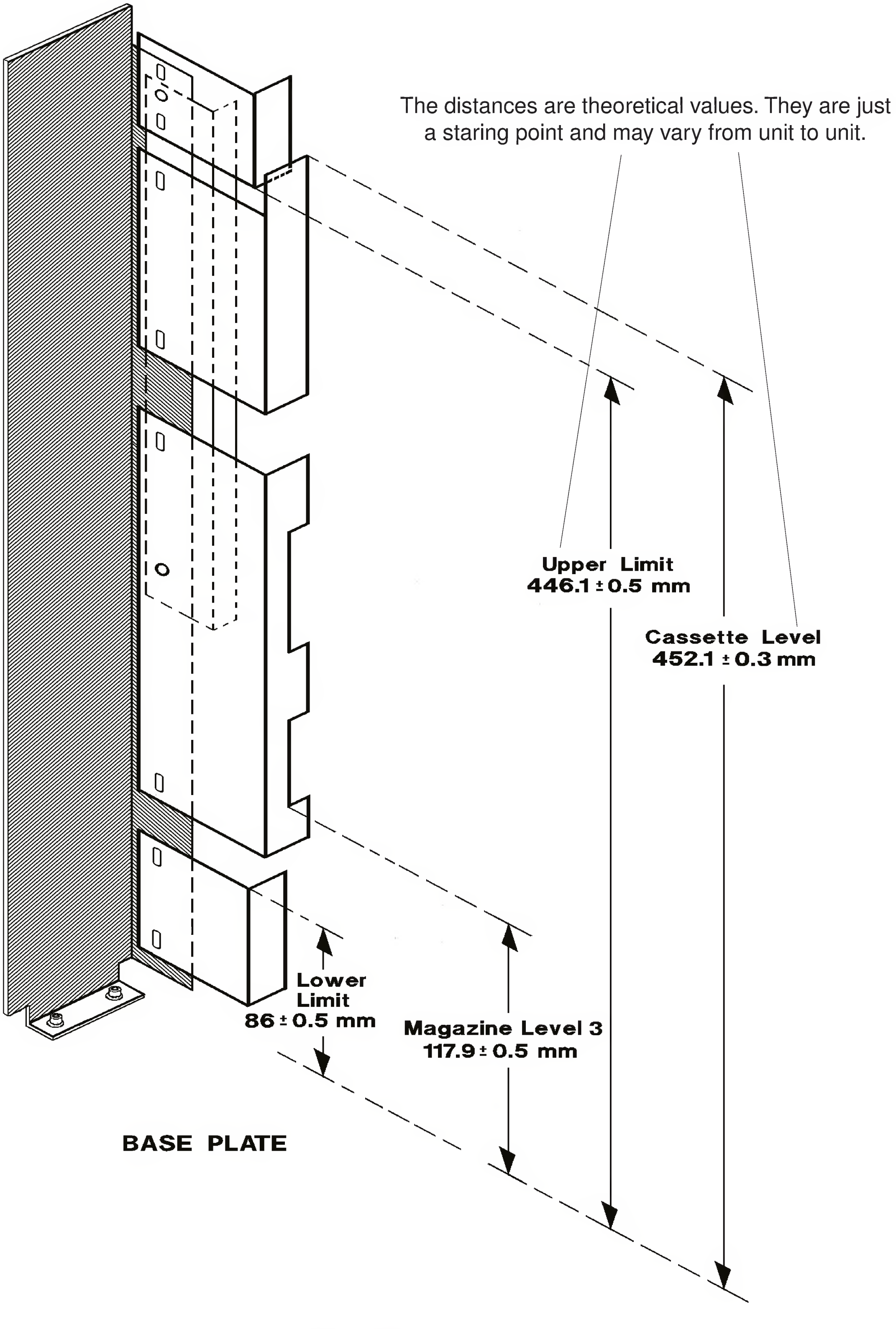

The distances are theoretical values. They are just a staring point and may vary from unit to unit.
Upper Limit 446.1 ± 0.5 mm
Cassette Level 452.1 ± 0.3 mm
Lower Limit 86 ± 0.5 mm
Magazine Level 3 117.9 ± 0.5 mm
BASE PLATE

figure 3-63

11. Set the edge of LOWER LIMIT to a distance of 86 ±0.5 mm to the BASE PLATE.

12. Fasten the MOUNTING SCREWS.

13. Start the SCAN RUN.
    Start the SERVICE PROGRAM
    Select SERVICE MODE from the GLOBAL MENU .... press ENTER
    ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
    UNIT DATA are displayed .... press ENTER
    Select change ML300 DATA from the MAIN MENU .... press ENTER
    Select CHANGE PARAMETER .... press ENTER
    Select SCAN RUN .... press ENTER
    Select STORE PARAMETERS .... press ENTER

14. Do the NEARLY EMPTY adjustment.
    Select NEARLY EMPTY... press ENTER

15. Exit the SERVICE MODE
    Select STORE PARAMETERS .... press ENTER
    Press BACKSPACE twice
    Select QUIT ML300 SERVICE MODE.. press ENTER
    Select Quit the program.. press ENTER

16. Check the FILM POCKET ADJUSTMENT.

NEARLY EMPTY ADJUSTMENT

PURPOSE:
This adjustment finds automatically the correct value of NEARLY EMPTY.

Note

An empty MAGAZINE has to be used for this procedure.

1. Start the NEARLY EMPTY ADJUSTMENT
    Start the SERVICE PROGRAM
    Select SERVICE MODE from the GLOBAL MENU .... press ENTER
    ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
    UNIT DATA are displayed .... press ENTER
    Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
    Select CHANGE PARAMETER .... press ENTER
    Select NEARLY EMPTY... press ENTER

2. Follow the instructions given on the LAP TOP SCREEN.

3. Store the result.

Select STORE PARAMETER .... press ENTER

4. Exit the SERVICE MODE.

Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

SCAN RUN

PURPOSE:

This adjustment calculates automatically the distance between the various FILM POCKET POSITIONS and stores them in the battery backed up RAM.

Note

Check the NEARLY EMPTY adjustment after you did a SCAN RUN

1. Start the SCAN RUN

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select SCAN RUN .... press ENTER

2. Store the result.

Select STORE PARAMETER .... press ENTER

3. Exit the SERVICE MODE.

Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

MAGAZINE AREA

MAGAZINE OPENER

PURPOSE:

To fully open and close the MAGAZINES.

COARSE ADJUSTMENT WITH ALL MAGAZINES OUT.

1. Take all PANELS off.
2. Loosen SENSOR B36/M_OP_EO MAGAZINE OPENING END SWITCH and B37/M_OP_EC MAGAZINE CLOSING END SWITCH and move them to their middle position.

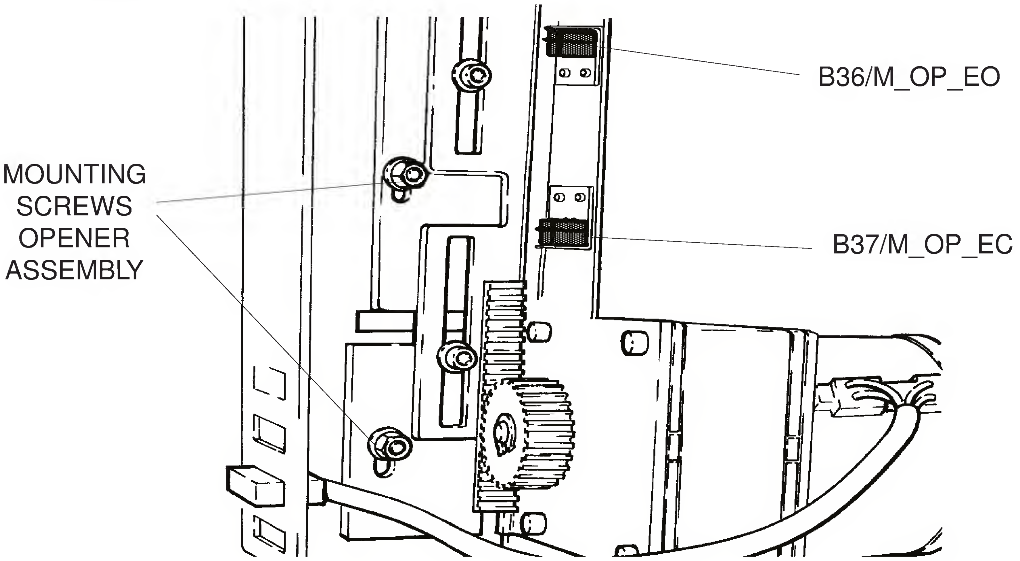


figure 3-64

3. Fasten the SENSORS.
4. Loosen the MOUNTING SCREWS of the OPENER ASSEMBLY.
5. Start the MAGAZINE OPENER MOTOR to close the MAGAZINES. Lower the MAGAZINE OPENER ASSEMBLY until the OPENER rests on the MAGAZINE GUIDES.

Start the SERVICE PROGRAM

Select SERVICE MODE from the GLOBAL MENU .... press ENTER

ENTER SERVICE MODE MESSAGE is displayed.. press ENTER

UNIT DATA are displayed .... press ENTER

Select COMPONENT TEST from the MAIN MENU .... press ENTER

Select MAGAZINE MOTORS .... press ENTER

Select MAGAZINE OPENING M14 .... press ENTER

Select FORWARD
Select BACKWARD

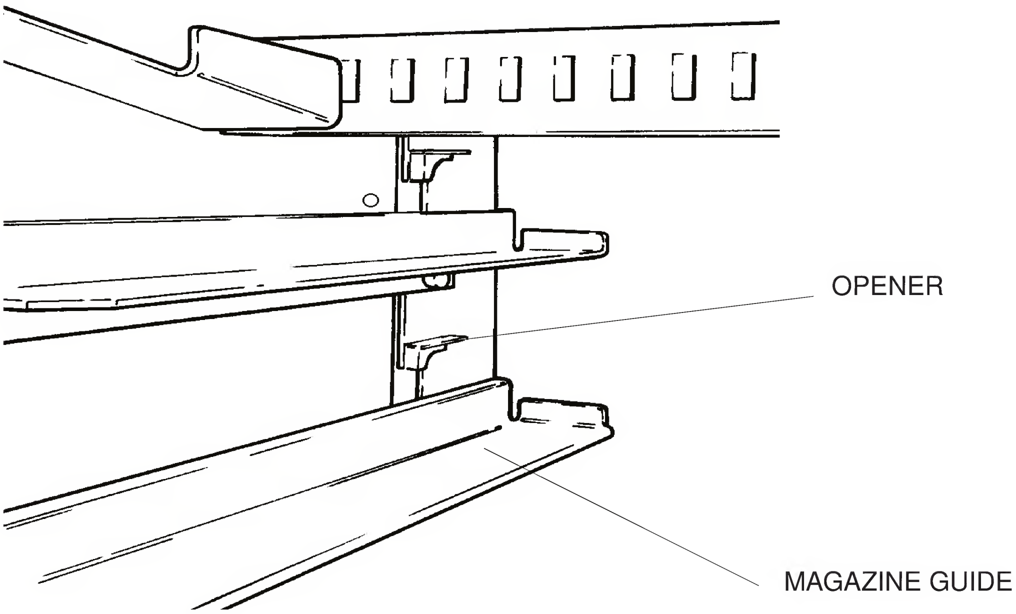


figure 3-65

6. Manually lift the MAGAZINE OPENER ASSEMBLY for 1mm.

7. Fasten the MAGAZINE OPENER ASSEMBLY MOUNTING SCREWS.

FINE ADJUSTMENT WITH ALL MAGAZINES IN.

Note

USE EMPTY MAGAZINES

1. Start the MAGAZINE OPENER MOTOR to open the MAGAZINES.
Select FORWARD

2. Check if all magazines are fully opened.

3. If necessary readjust the position of the SENSOR B36/M_OP_EO.

4. Make sure that the MAGAZINE LIDS do not touch the above MAGAZINE GUIDES.

5. Close the MAGAZINES.
Select BACKWARD

6. If necessary readjust the position of the SENSOR B37/M_OP_EC.

7. Exit the SERVICE MODE.
Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

8. Reload the MAGAZINES.

STEPPER MOTOR FILM POCKET M10/M_PO

PURPOSE:

To adjust the phase current of M10 to the correct value. If the current is too low M10 will not run correctly and steps are lost. If the current is too high the POWER AMPLIFIERS U46 and U47 on CIRCUIT BOARD A4 sheet 5 will become overloaded.

1. Connect the GROUND LEAD of the DVM to TP11 on CIRCUIT BOARD A4 sheet 9. See the drawing on the next page.

2. Connect the POSITIVE LEAD of the DVM to TP15 on CIRCUIT BOARD A4 sheet 5. See the drawing on the next page.

3. Start the STEPPER MOTOR FILM POCKET.
Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select MAGAZINE MOTORS .... press ENTER
Select STEPPER MOTOR FILM POCKET M10 .... press ENTER
Select MOVE TO CASSETTE LEVEL

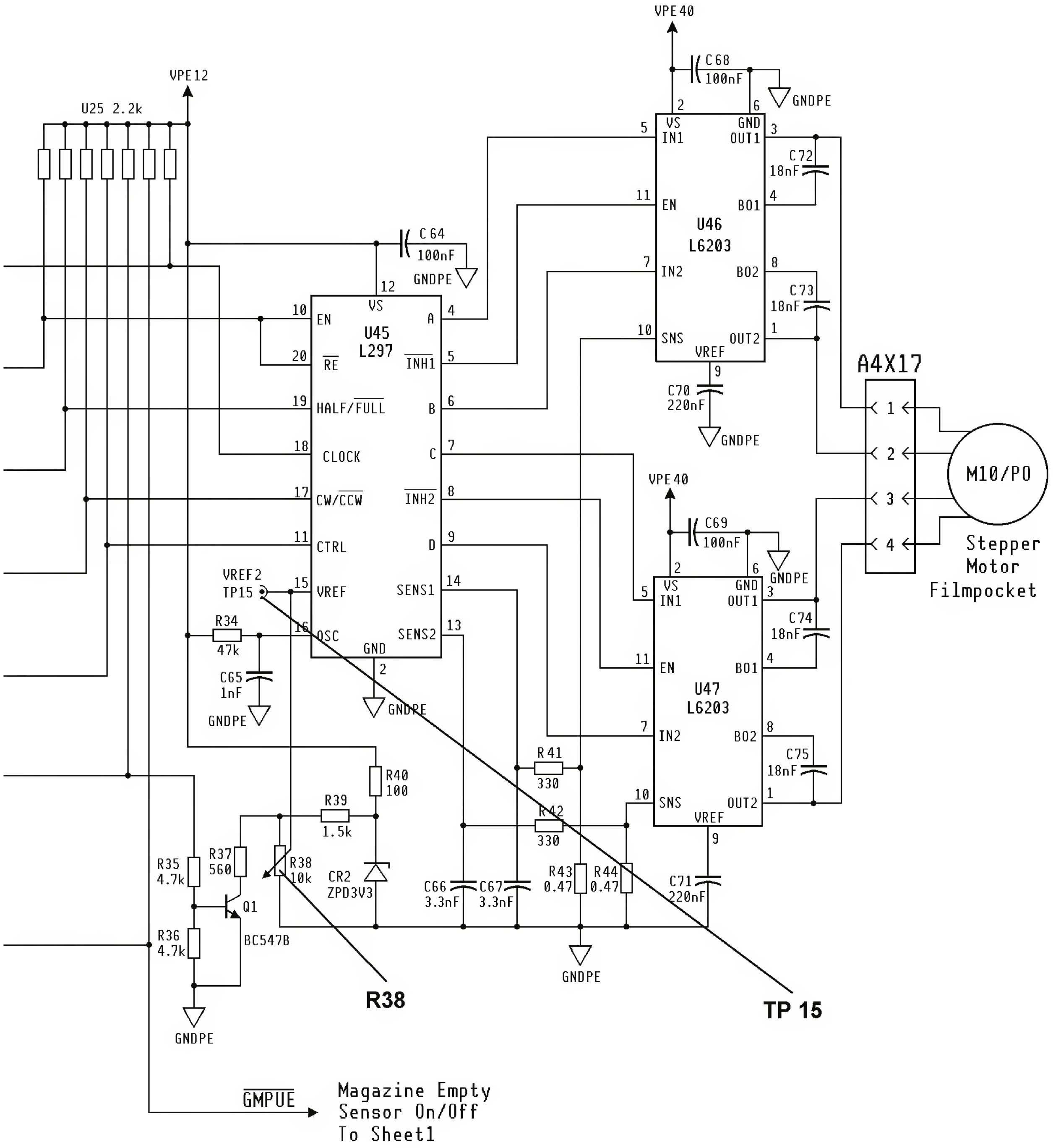

VPE40
C68
100nF
GNDPE
VPE12
U25 2.2k
VS
IN1
GND
OUT1
C72
18nF
EN
U46
L6203
BO1
IN2
BO2
C73
18nF
SNS
VREF
OUT2
C64
100nF
GNDPE
VS
U45
L297
EN
A
RE
INH1
HALF/FULL
B
CLOCK
C
CW/CCW
INH2
CTRL
D
VREF
SENS1
OSC
SENS2
GND
VREF2
TP15
R34
47k
C65
1nF
GNDPE
GNDPE
C70
220nF
GNDPE
A4X17
M10/PO
Stepper
Motor
Filmpocket
VPE40
C69
100nF
GNDPE
VS
IN1
GND
OUT1
C74
18nF
EN
U47
L6203
BO1
IN2
BO2
C75
18nF
SNS
VREF
OUT2
R40
100
R41
330
R42
330
R39
1.5k
R35
4.7k
R37
560
R38
10k
CR2
ZPD3V3
C66
3.3nF
C67
3.3nF
R43
0.47
R44
0.47
C71
220nF
Q1
BC547B
R36
4.7k
GNDPE
GNDPE
R38
TP 15
GMPUE
Magazine Empty
Sensor On/Off
To Sheet1

figure 3-66

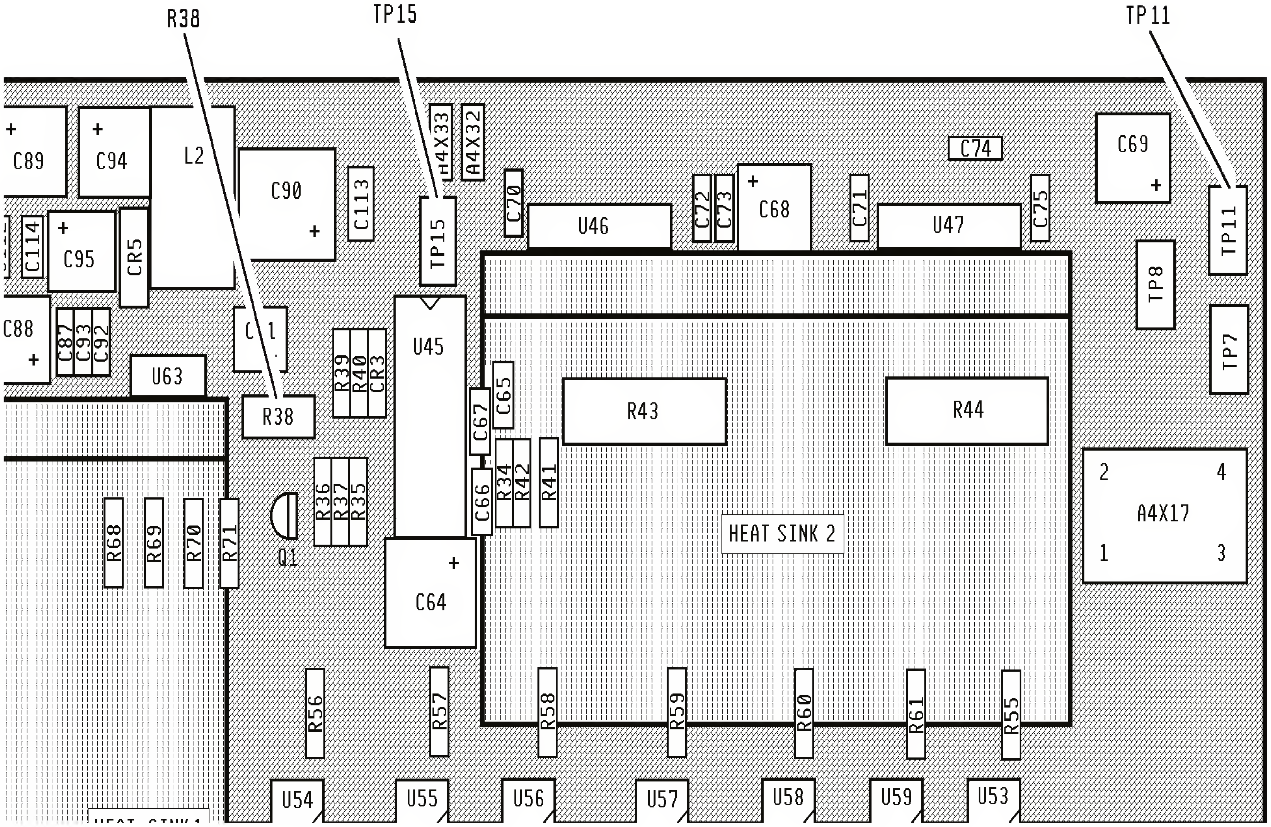

R38
TP15
TP11
C89
C94
L2
C90
C113
A4X33
A4X32
C70
U46
C72
C73
C68
C74
C71
U47
C75
C69
C114
C95
CR5
TP15
TP11
TP8
TP7
C88
C87
C93
C92
C91
U63
R38
R39
R40
CR3
U45
C65
C67
R43
R44
A4X17
2
4
1
3
R36
R37
R35
C66
R34
R42
R41
HEAT SINK 2
R68
R69
R70
R71
Q1
C64
R56
R57
R58
R59
R60
R61
R55
U54
U55
U56
U57
U58
U59
U53
HEAT SINK 1

figure 3-67

4. Adjust R38 to 1.88V ±50mV. This results in a phase current of 4A.

5. Disconnect the DVM.

6. Exit the SERVICE MODE.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE.. press ENTER
Select Quit the program.. press ENTER

FILM CHUTE

INTERFACE FLAP

Purpose:

This flap protects the FILM in the FILM CHUTE from light. The distance between the plush strip and the flap should not be more than 2 mm, when closed.

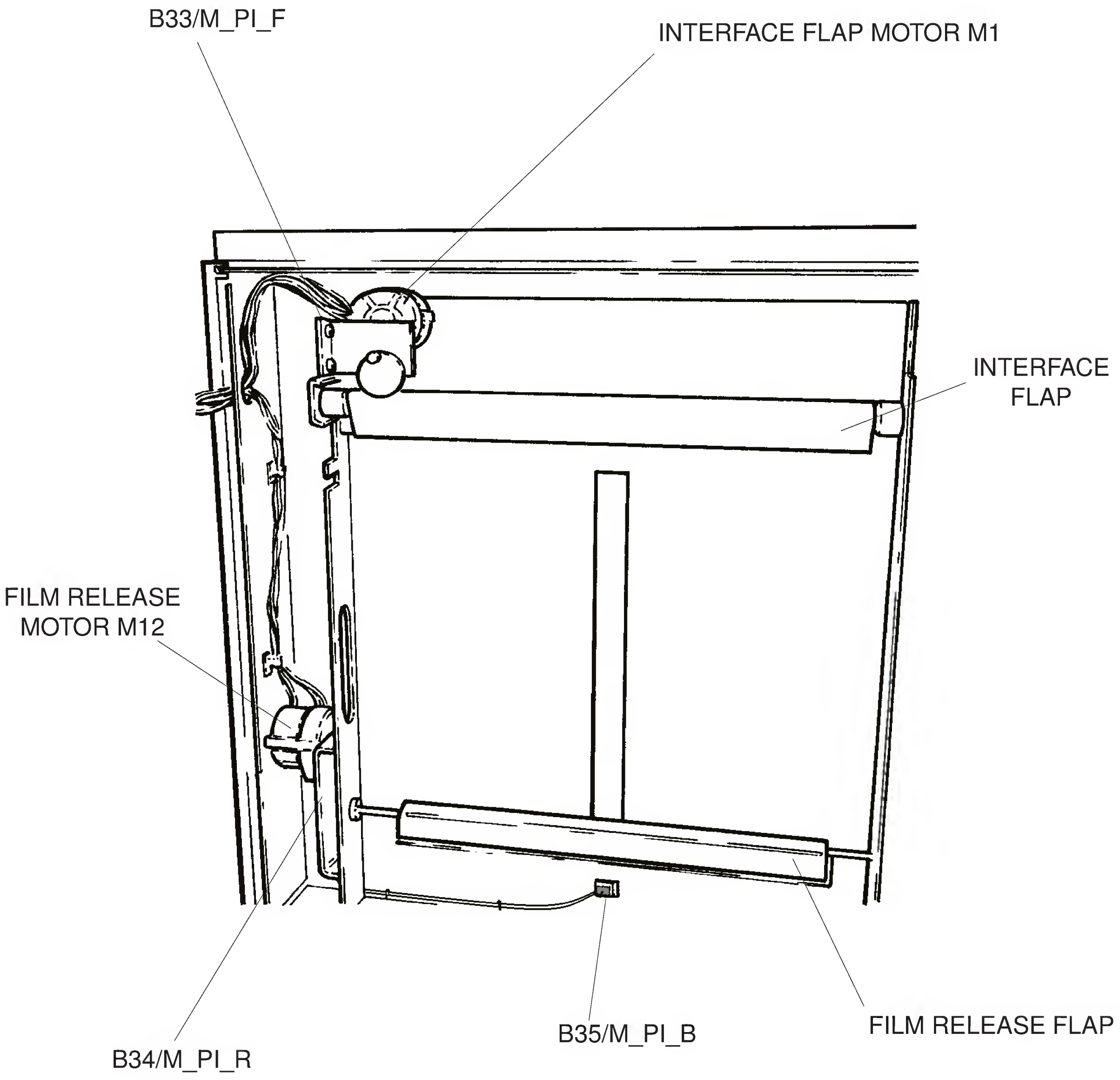

B33/M_PI_F
INTERFACE FLAP MOTOR M1
INTERFACE FLAP
FILM RELEASE MOTOR M12
B34/M_PI_R
B35/M_PI_B
FILM RELEASE FLAP

figure 3-68

INTERFACE FLAP CAM and SENSOR B33

Purpose:

The INTERFACE FLAP MOTOR should stop when the INTERFACE FLAP is closed.

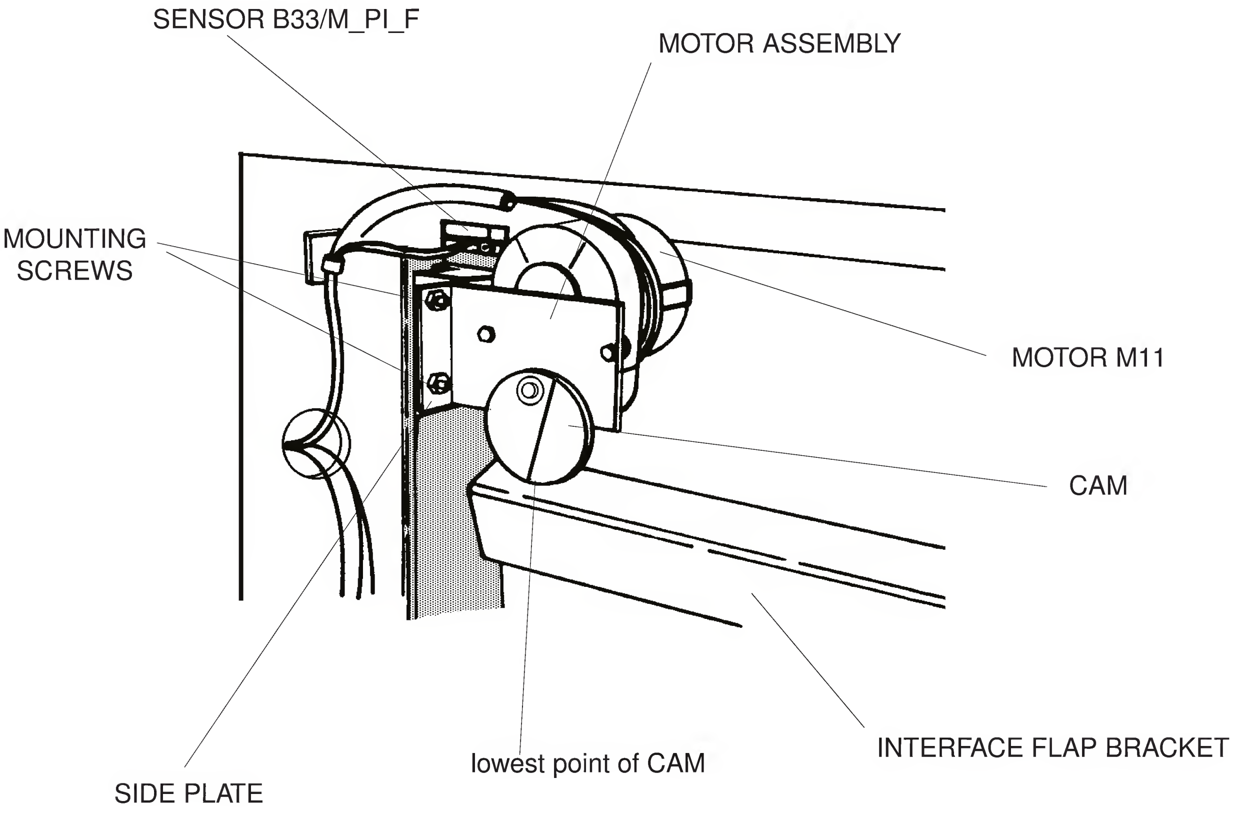

SENSOR B33/M_PI_F
MOTOR ASSEMBLY
MOUNTING SCREWS
MOTOR M11
CAM
INTERFACE FLAP BRACKET
lowest point of CAM
SIDE PLATE

figure 3-69

PART 1. INTERFACE FLAP CAM

1. Rotate out the FILM CHUTE.
2. Turn the CAM clockwise by hand until the lowest point of the CAM rides on the INTERFACE FLAP BRACKET.
3. Make sure that the distance between the plush and the INTERFACE FLAP is not more than 2 mm. If necessary, move the MOTOR ASSEMBLY down or up after loosening the MOUNTING SCREWS.

4. Start the INTERFACE FLAP MOTOR M11.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST .... press ENTER
Select INTERFACE/FILM MOT. .... press ENTER
Select INTERFACE FLAP MOTOR M11 .... press ENTER
Select MOTOR ON

5. While the CAM is turning, make sure that the SIDE PLATE is moving only slightly when the CAM is touching the INTERFACE FLAP BRACKET. If the BRACKET moves too much proceed with step 6 else proceed with step 10.

6. Stop MOTOR M11.

Select MOTOR OFF

7. Reposition the MOTOR ASSEMBLY.

8. Start MOTOR M11.

Select MOTOR ON

9. Check once more that the SIDE PLATE is moving only slightly when the CAM is touching the INTERFACE FLAP BRACKET

10. Stop MOTOR M11.

Select MOTOR OFF

Part 2. SENSOR B 33

Purpose:

The INTERFACE FLAP MOTOR should stop when the INTERFACE FLAP is closed. This is basically correct. However, especially when operated with 60 Hz the INTERFACE FLAP MOTOR M11 does not stop immediately and the SENSOR B33/M_PI_F may by released. If now the next CASSETTE is unloaded, the CASSETTE TASK believes that the INTERFACE FLAP is already open. In this case the FLAP is not opened and the FILM falls into the area of the FILM POCKET. To avoid this failure, adjust SENSOR B 33 so that the MOTOR M11 is stopped reliably, before the CAM reaches the lowest position.

1. Start MOTOR M11.

   Select MOTOR ON

Note

In some units MOTOR M11 runs clockwise and in others counter-clockwise. This has no effect on the function.

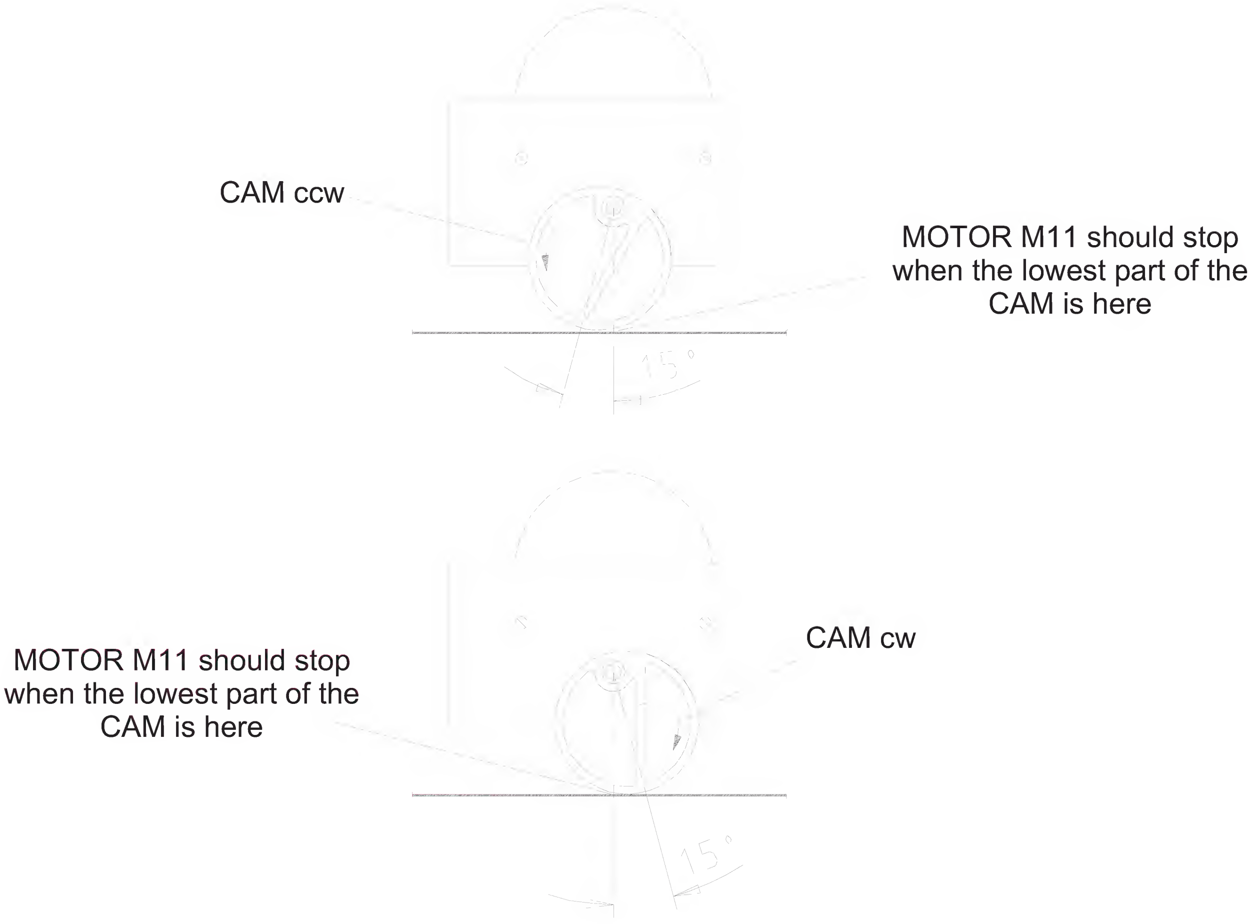

CAM ccw
MOTOR M11 should stop when the lowest part of the CAM is here
15°
MOTOR M11 should stop when the lowest part of the CAM is here
CAM cw
15°

figure 3-70

2. Exit the SERVICE MODE.

Select MOTOR OFF..press ENTER
Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST........................press ENTER
Select QUIT ML300 SERVICE MODE....................Press ENTER
Select Quit the program...................................press ENTER

3. Fix the FILM CHUTE with all MOUNTING SCREWS.

FILM RELEASE

Purpose:

The FILM RELEASE FLAP in the FILM CHUTE must close completely as shown. It the FILM RELEASE FLAP is not closing as shown, it may result in scratches on the FILM or in a film jam in the FILM CHUTE.

Purpose:

To hold the FILM securely back until it can be delivered to the PROCESSOR.

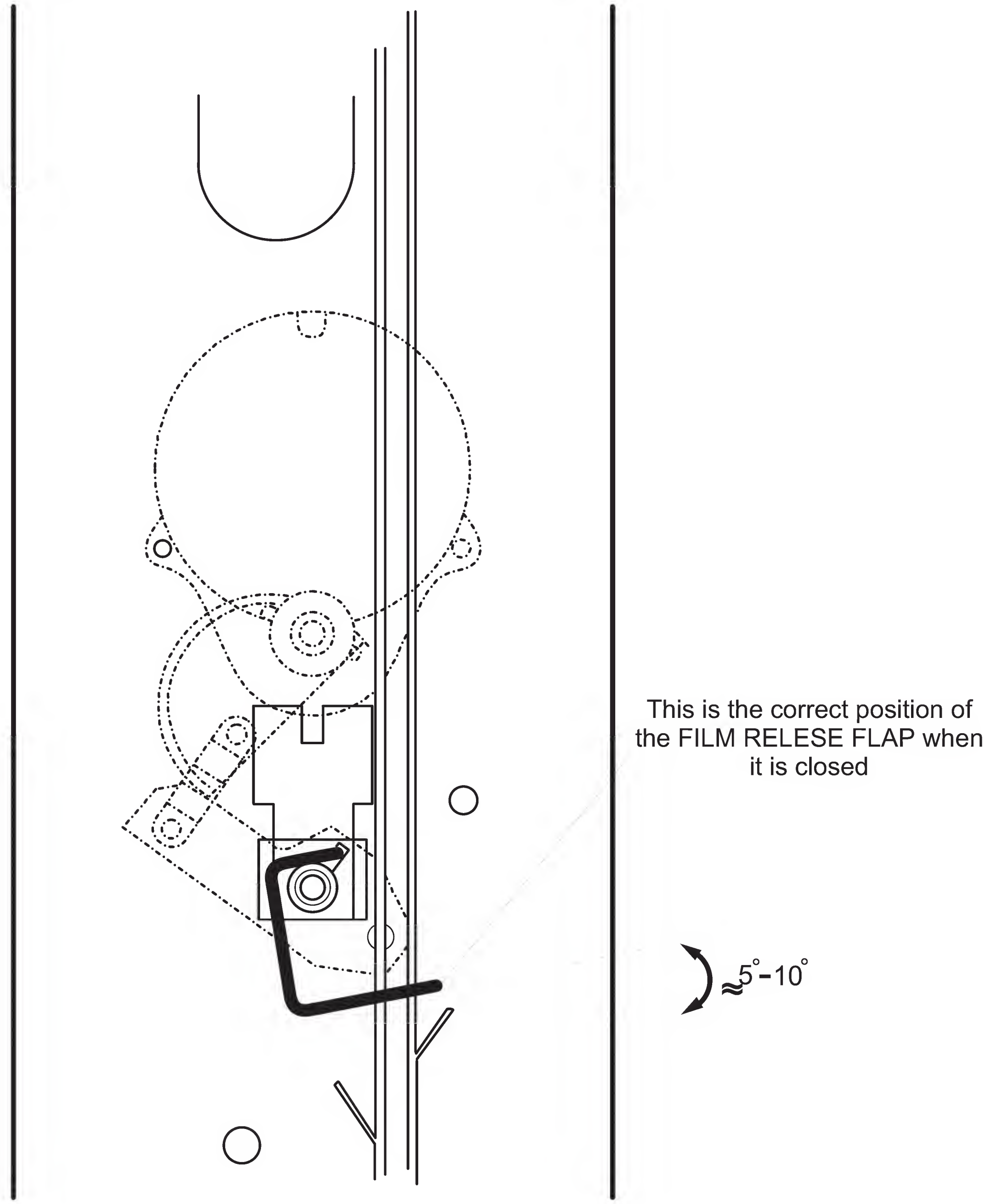

This is the correct position of the FILM RELESE FLAP when it is closed
≈5°-10°

figure 3-71

1. Start the MOTOR FILM RELEASE M12. Wait until it reaches HOME POSITION and stops.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST .... press ENTER
Select INTERFACE/FILM MOT. .... press ENTER
Select FILM RELEASE MOTOR M12.. press ENTER
Select MOTOR ON
Select MOTOR OFF

2. Loosen the MOUNTING SCREWS.

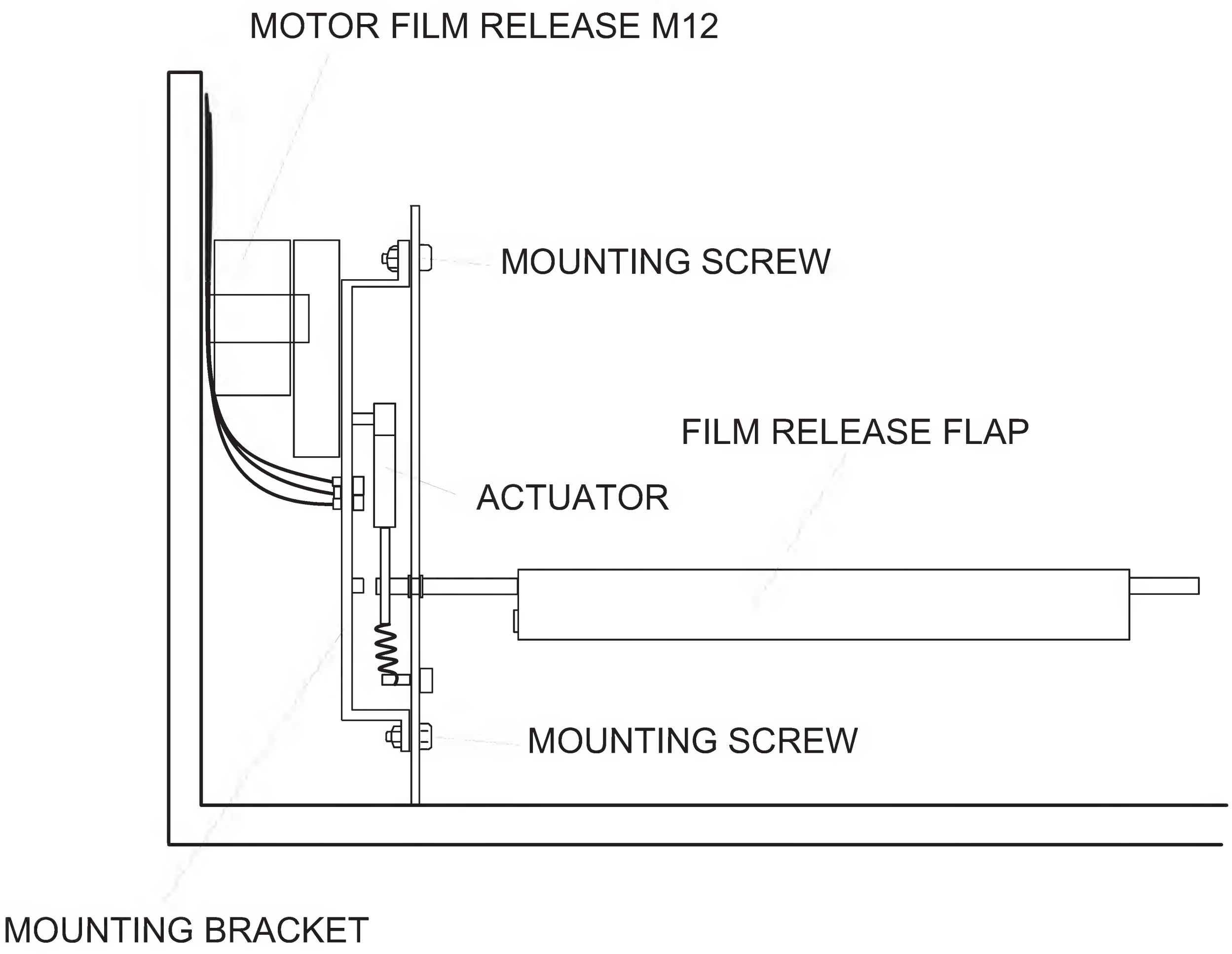

MOTOR FILM RELEASE M12
MOUNTING SCREW
FILM RELEASE FLAP
ACTUATOR
MOUNTING SCREW
MOUNTING BRACKET

figure 3-72

3. Press on the FILM RELEASE FLAP to close it and hold it.

4. Move the MOUNTING BRACKET until there is a gap of 1 mm between the CAM and the ACTUATOR.

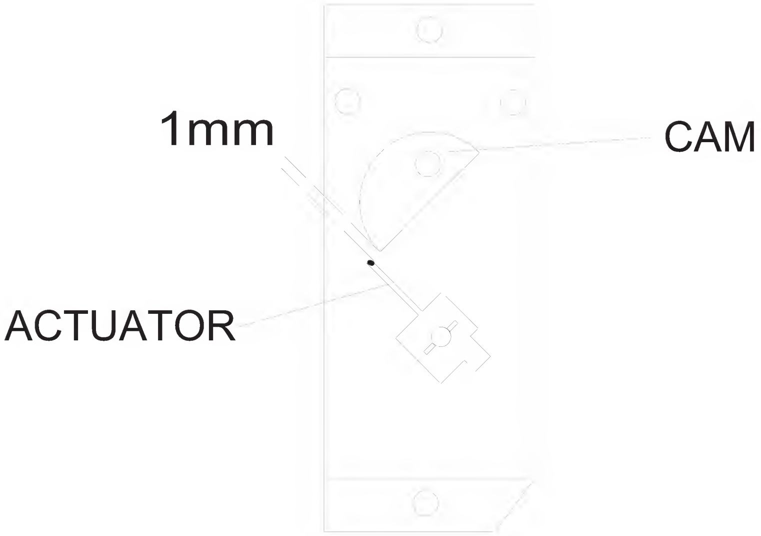


figure 3-73

5. Fasten the MOUNTING SCREWS.

6. Exit the SERVICE MODE.

Press 3 times BACKSPACE
Select LEAVE COMPONENT TEST .... press ENTER
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

FILM CHUTE GUIDE

Purpose:

To ensure proper FILM TRANSPORT in the CHUTE.

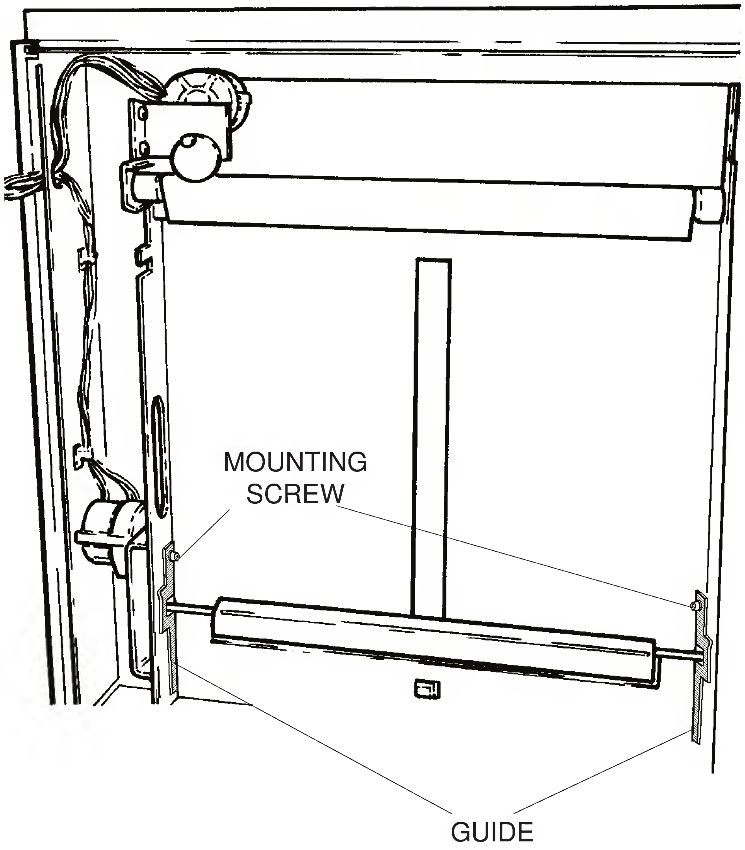


figure 3-74

1. Loosen the MOUNTING SCREWS.

2. Push the GUIDES all the way up.

3. Tighten the MOUNTING SCREWS.

STEPPER MOTOR PROCESSOR INTERFACE M13/M_PI

PURPOSE:

To adjust the phase current of M13 to the correct value. If this current is too low M13 will not run correctly. If this current is too high the POWER AMPLIFIERS U43 and U44 on CIRCUIT BOARD A4 sheet 4 will become overloaded.

1. Start STEPPER MOTOR PROCESSOR INTERFACE.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU..................................... press ENTER
Select INTERFACE/FILM MOT. .... press ENTER
Select MAGAZINE ROLLER MOTOR M13 .... press ENTER
*Select **MOTOR ON***

3. Connect the GROUND LEAD of the DVM to TP 11 GND PE on CIRCUIT BOARD A4 sheet 9.

4. Connect the POSITIVE LEAD of the DVM to TP 14 on CIRCUIT BOARD A4 sheet 4.

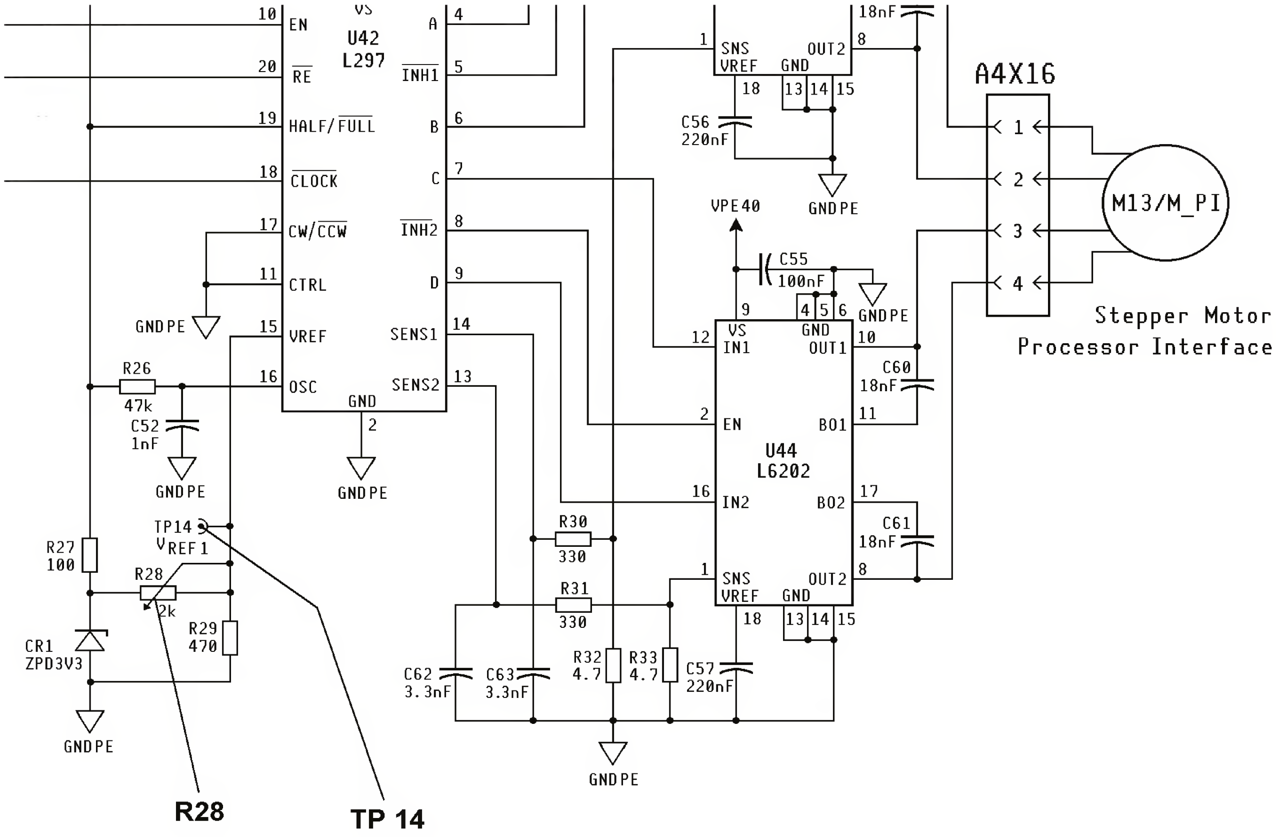

U42
L297
VS
EN
RE
HALF/FULL
CLOCK
CW/CCW
CTRL
VREF
OSC
GND
A
INH1
B
C
INH2
D
SENS1
SENS2
R26
47k
C52
1nF
GNDPE
TP14
VREF1
R27
100
R28
2k
R29
470
CR1
ZPD3V3
R30
330
R31
330
R32
4.7
R33
4.7
C62
3.3nF
C63
3.3nF
C57
220nF
C56
220nF
C55
100nF
VPE40
U44
L6202
SNS
VREF
OUT2
OUT1
IN1
IN2
B01
B02
C60
18nF
C61
18nF
18nF
A4X16
M13/M_PI
Stepper Motor
Processor Interface
R28
TP 14

figure 3-75

5. Adjust R28 to 2.24V ±50mV. This results in a phase current of 0.4A.

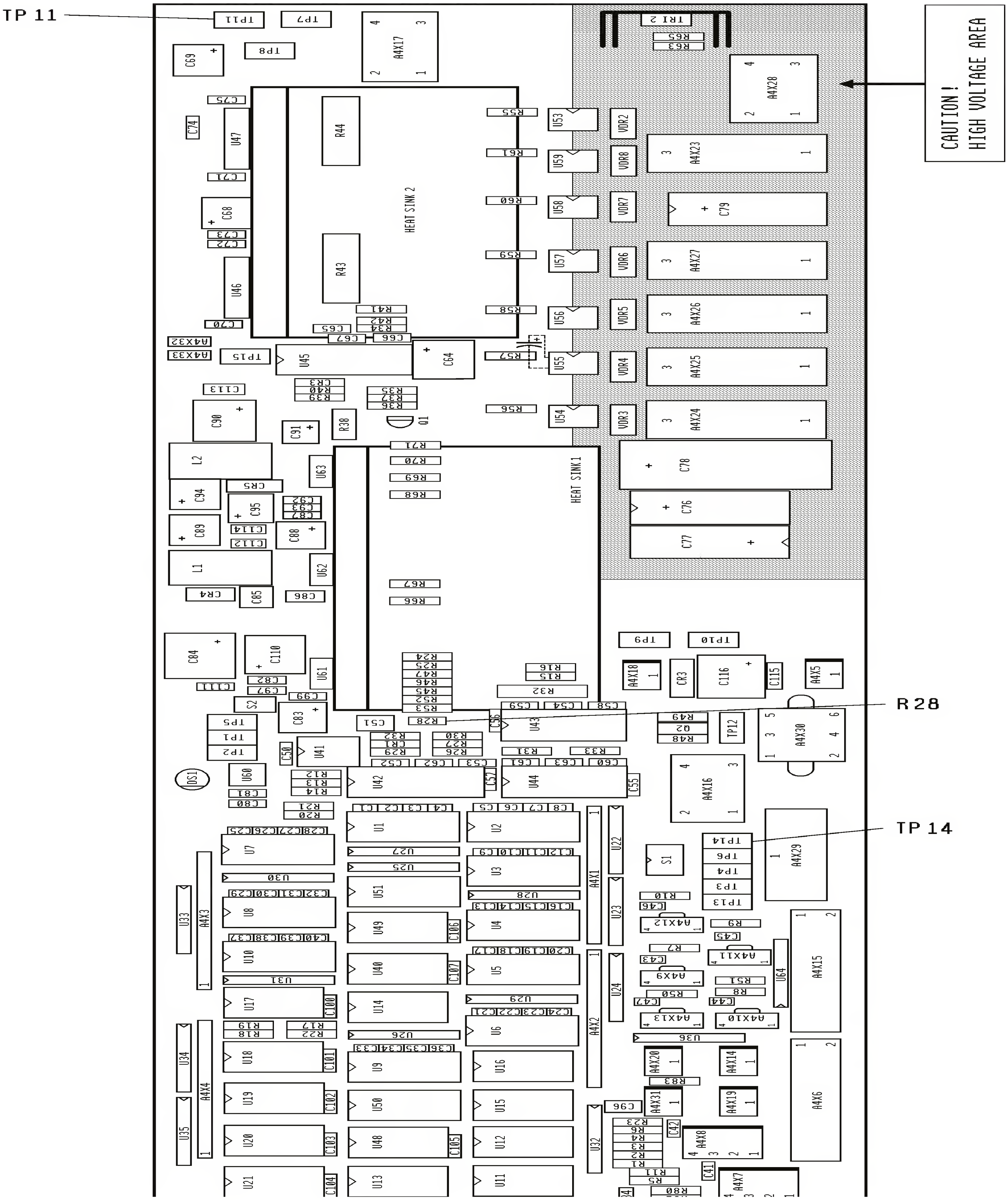

TP 11
CAUTION !
HIGH VOLTAGE AREA
HEAT SINK 2
HEAT SINK 1
R28
TP 14

figure 3-76

6. Disconnect the DVM.

7. Stop the STEPPER MOTOR.
   Select MOTOR OFF

8. Exit the SERVICE MODE.
   Press 3 times BACKSPACE
   Select LEAVE COMPONENT TEST .... press ENTER
   Select QUIT ML300 SERVICE MODE.. press ENTER
   Select Quit the program... press ENTER

SENSOR B35 FILM IN INTERFACE BOTTOM

Purpose:

This adjustment ensures that the FILM is recognised in the bottom of the FILM CHUTE.

Caution

Take proper ESD SAFETY PRECAUTIONS when doing this adjustment.

1. Switch off the XML300.

2. Pull out U41 off PCB A4.

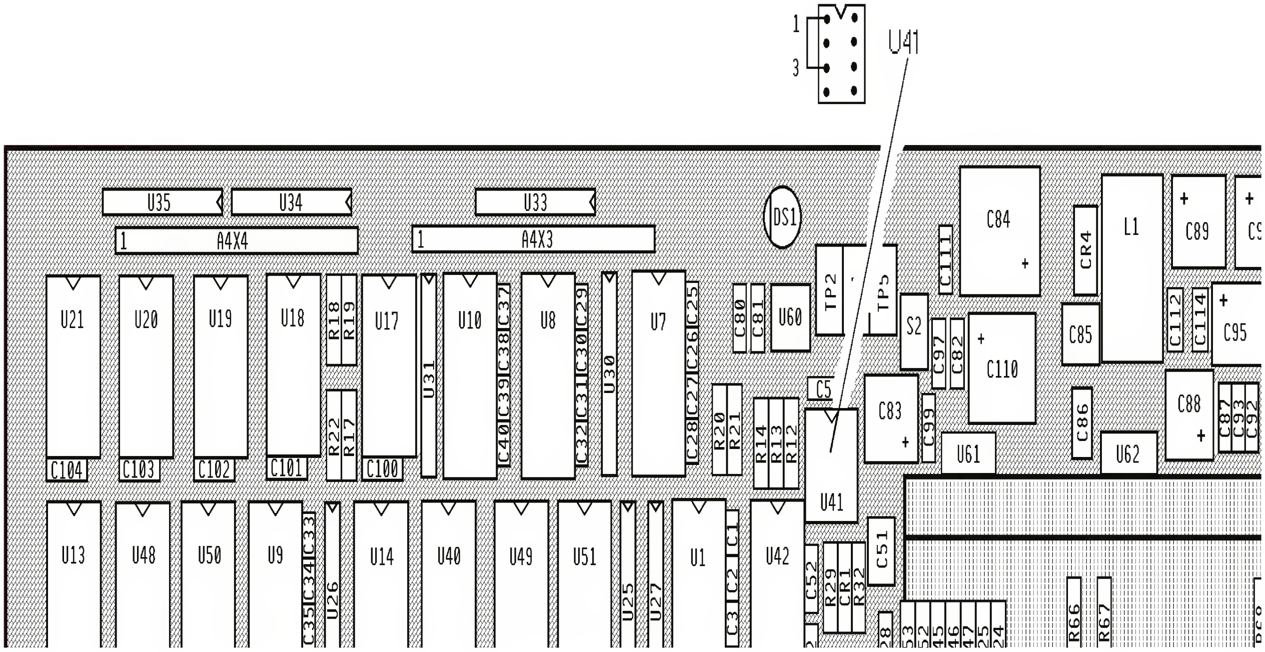

1
3
U41
U35
U34
U33
1 A4X4
1 A4X3
DS1
U21
U20
U19
U18
R18
R19
U17
U31
U10
C37
C38
C39
C40
U8
C29
C30
C31
C32
U30
U7
C25
C26
C27
C28
C80
C81
U60
TP2
TP5
C111
C84
CR4
L1
C89
S2
C97
C82
C110
C85
C112
C114
C95
C104
C103
C102
C101
C100
R22
R17
R20
R21
R14
R13
R12
C5
C83
C99
U61
C86
U62
C88
C87
C93
C92
U13
U48
U50
U9
C35
C34
C33
U26
U14
U40
U49
U51
U25
U27
U1
C3
C2
C1
U42
C52
R29
CR1
R32
C51
R66
R67

figure 3-77

3. Connect PIN 1 to PIN 3 at the SOCKET of U41.

4. Connect the DVM to TP12 of PCB A4 and to TP11(GND PE) of PCB A4 (for the location of the TEST PINS see the drawing on the next page).

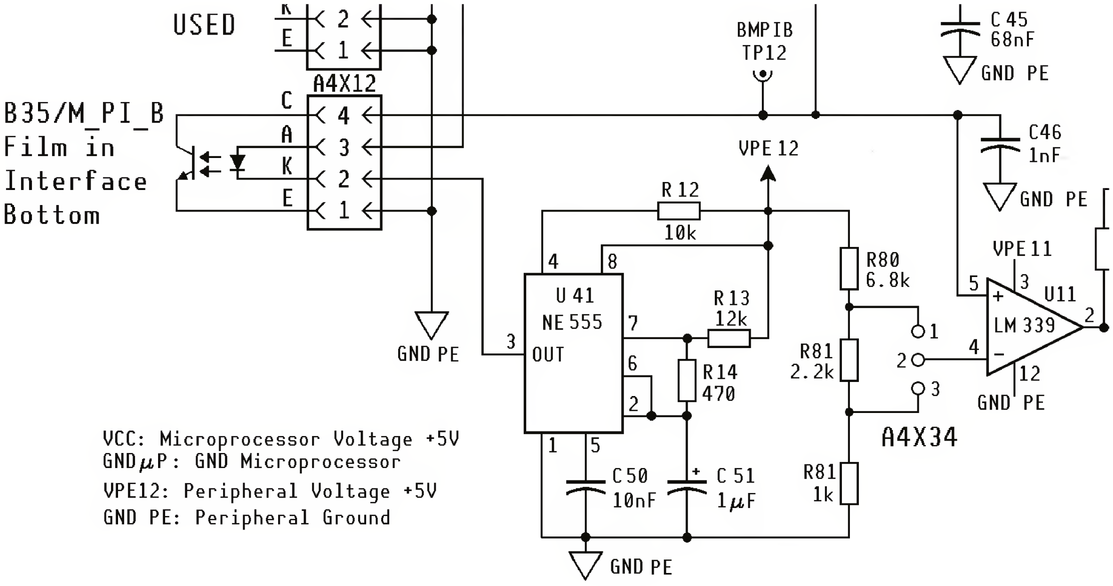

USED
K
E
2
1
A4X12
B35/M_PI_B
Film in
Interface
Bottom
C
A
K
E
4
3
2
1
GND PE
BMPIB
TP12
VPE 12
C 45
68nF
GND PE
C46
1nF
GND PE
R 12
10k
4
8
U 41
NE 555
OUT
3
7
6
2
1
5
R 13
12k
R14
470
C 50
10nF
C 51
1µF
GND PE
R80
6.8k
R81
2.2k
R81
1k
1
2
3
A4X34
VPE 11
U11
LM 339
5
3
4
2
12
GND PE
VCC: Microprocessor Voltage +5V
GNDµP: GND Microprocessor
VPE12: Peripheral Voltage +5V
GND PE: Peripheral Ground

figure 3-78

5. Switch on the XML300.

6. Adjust the mechanical position of B35 relative to its MIRROR, so that the indicated voltage is < 500mV.

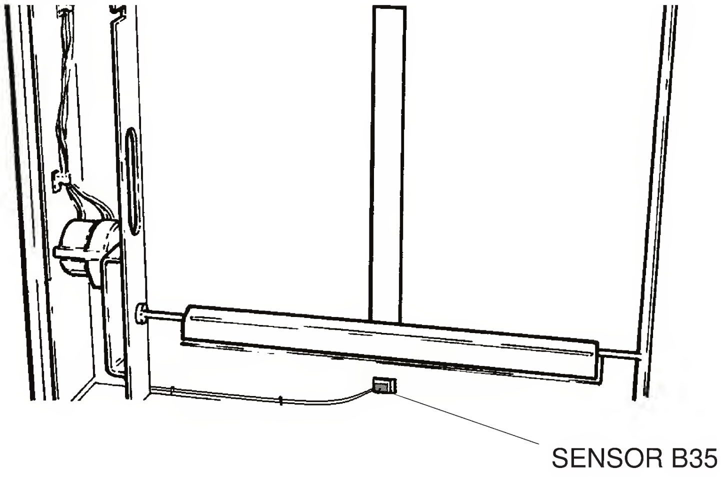
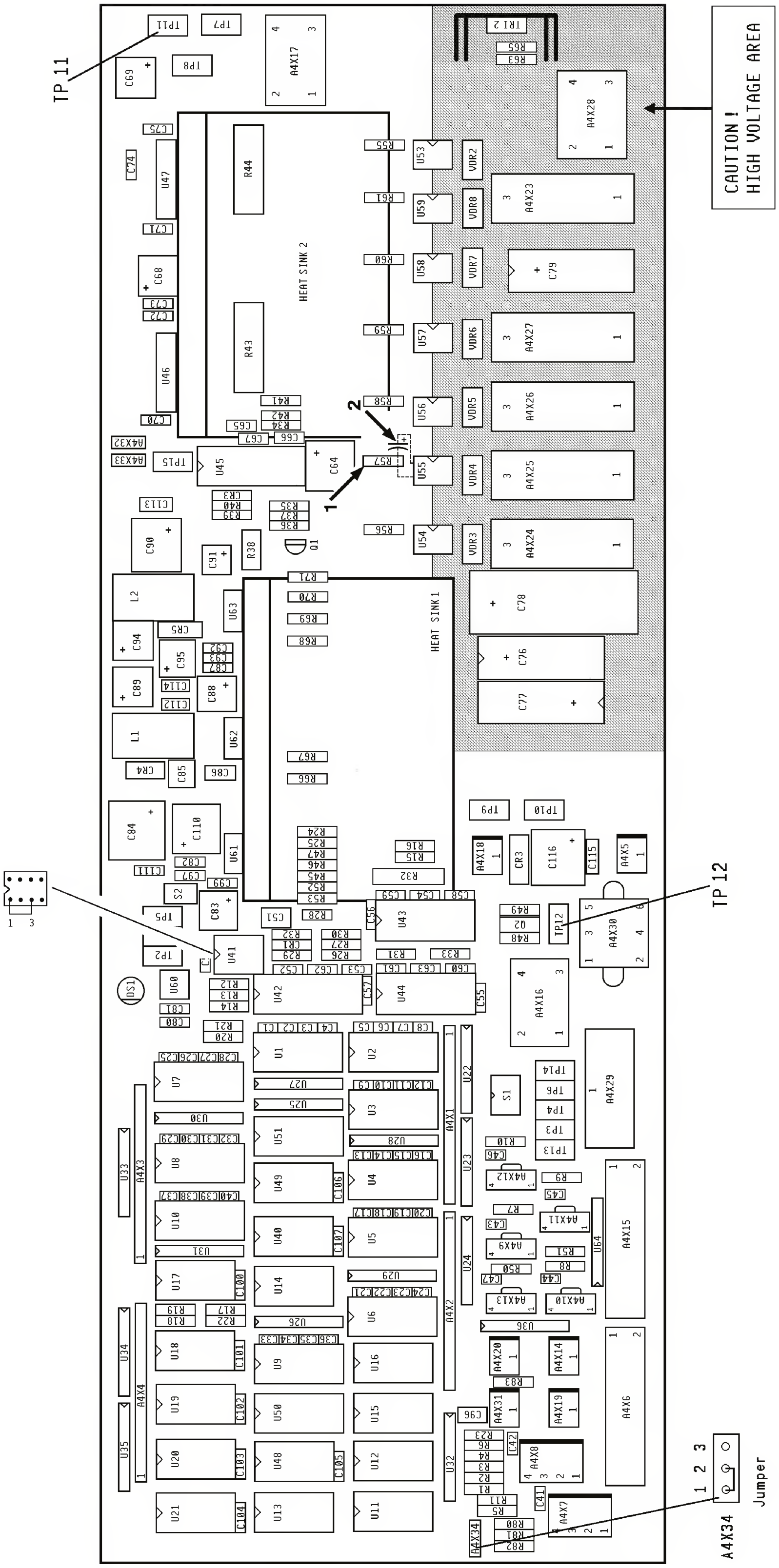


figure 3-79


TP 11
CAUTION ! HIGH VOLTAGE AREA
HEAT SINK 2
HEAT SINK 1
1
2
TP 12
1 3
A4X34
1 2 3
Jumper

PCB A4

figure 3-80

Note

The FILM should be close to the SENSOR and not close to the MIRROR

7. Interrupt the infrared beam with a FILM. The voltage should now be > 1.9 V.

8. If the values are not correct, reposition SENSOR B35 and its MIRROR.

9. Check this adjustment with all different types of customer films.

10. If necessary, do the corrections.

11. Switch off the XML300.

12. Take out the JUMPER between PIN 1 and PIN 3 at the SOCKET of U41.

13. Insert U41.

14. Check for the correct setting of JUMPER A4X34. The JUMPER has to be between 1 and 2.

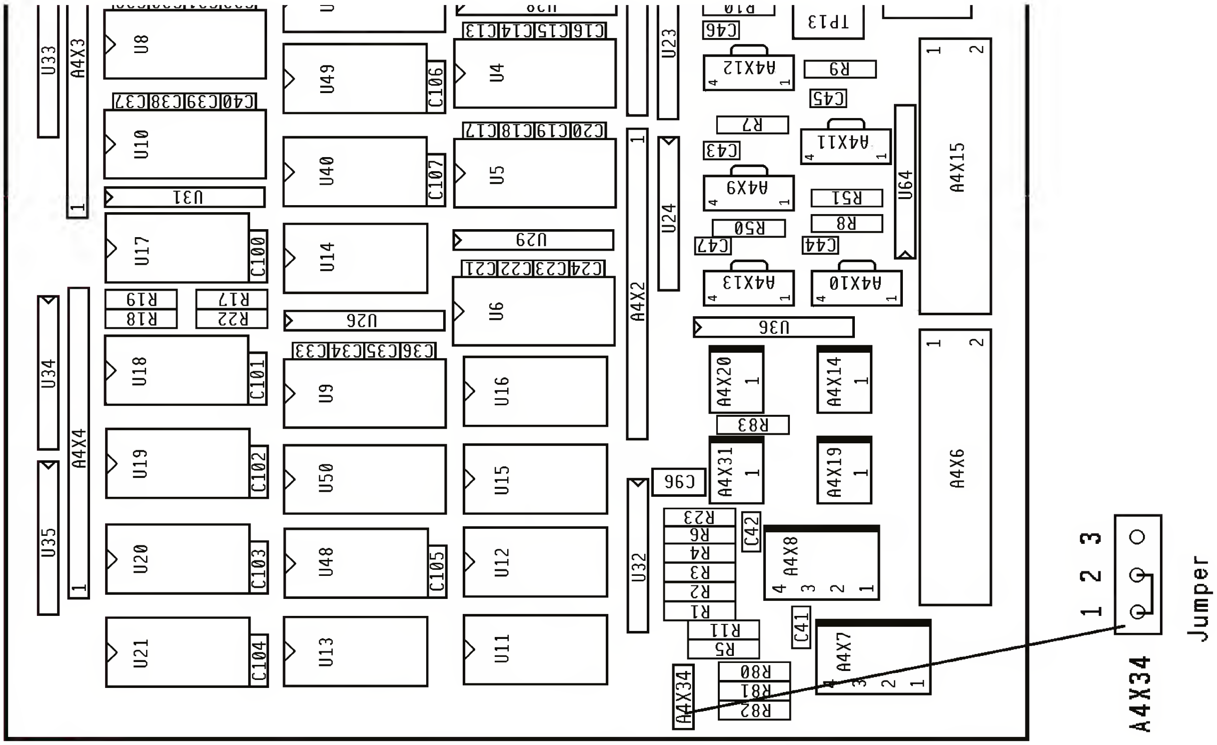

U33
A4X3
U8
U49
C106
U4
U23
C46
TP13
A4X12
R9
C45
A4X11
A4X15
U64
C37 C38 C39 C40
U10
U40
C107
C17 C18 C19 C20
U5
R7
C43
A4X9
R51
R8
U31
U17
C100
U14
U29
U24
R50
C47
C44
A4X2
R19
R18
R17
R22
U26
C21 C22 C23 C24
U6
A4X13
A4X10
U36
U34
U18
C101
C33 C34 C35 C36
U9
U16
A4X20
A4X14
R83
A4X6
A4X4
U19
C102
U50
U15
C96
A4X31
A4X19
U35
U20
C103
U48
C105
U12
U32
R23
R6
R4
R3
R2
R1
C42
A4X8
R11
R5
C41
A4X7
U21
C104
U13
U11
A4X34
R80
R81
R82
1 2 3
Jumper
A4X34

figure 3-81

ADJUSTMENT SENSOR B25 / B26 ML300 Plus

PURPOSE:

The ENTRANCE ROLLERS of the integrated 3000RA Processor do not detect the LEADING EDGE of the FILM transported from the ML300 Plus to the PROCESSOR. The FILM DETECTOR SENSORS are now part of the ML300 Plus PROCESSOR INTERFACE.

FILM DETECTOR B25 (right) is connected to A8X32 and FILM DETECTOR B26(left) is connected to A8X24.

To handle the 2 SENSORS a new OPERATING SOFTWARE is required.
It will be version 5.14 or higher.

1. Switch off the ML300 Plus.

2. Take off the REAR PANEL.

3. Take out the PROCESSOR INTERFACE from the ML300 Plus and place it on a safe surface.

4. Switch on the ML300 Plus.

5. Connect the LAP TOP COMPUTER to the ML300 Plus and start the SERVICE SOFTWARE.

Note

With SERVICE SOFTWARE 3.30 SENSORS B25/26 are not displayed. However you will hear the BEEP when one of these SENSORS changes its status.

6. Select the SENSOR TEST with SOUND.

7. Turn the EXIT ROLLERS for a complete revolution with no FILM in between. There must be no signal from the SENSOR TEST. This test is most important to avoid false film detection. If SENSOR B25 or B26 changes its status, loosen its MOUNTING SCREWS and move the SENSOR up or down as required. Fasten the MOUNTING SCREWS and repeat step 7.

8. Insert a piece of film 10 cm (4 in.) wide in the centre between the 2 EXIT ROLLERS. See the drawing on the next page.

9. Turn the EXIT ROLLERS for a complete revolution with the FILM in between. There must be a signal from the SENSOR TEST. It does not matter if the signal is interrupted during the revolution. The OPERATING SOFTWARE takes care of this.

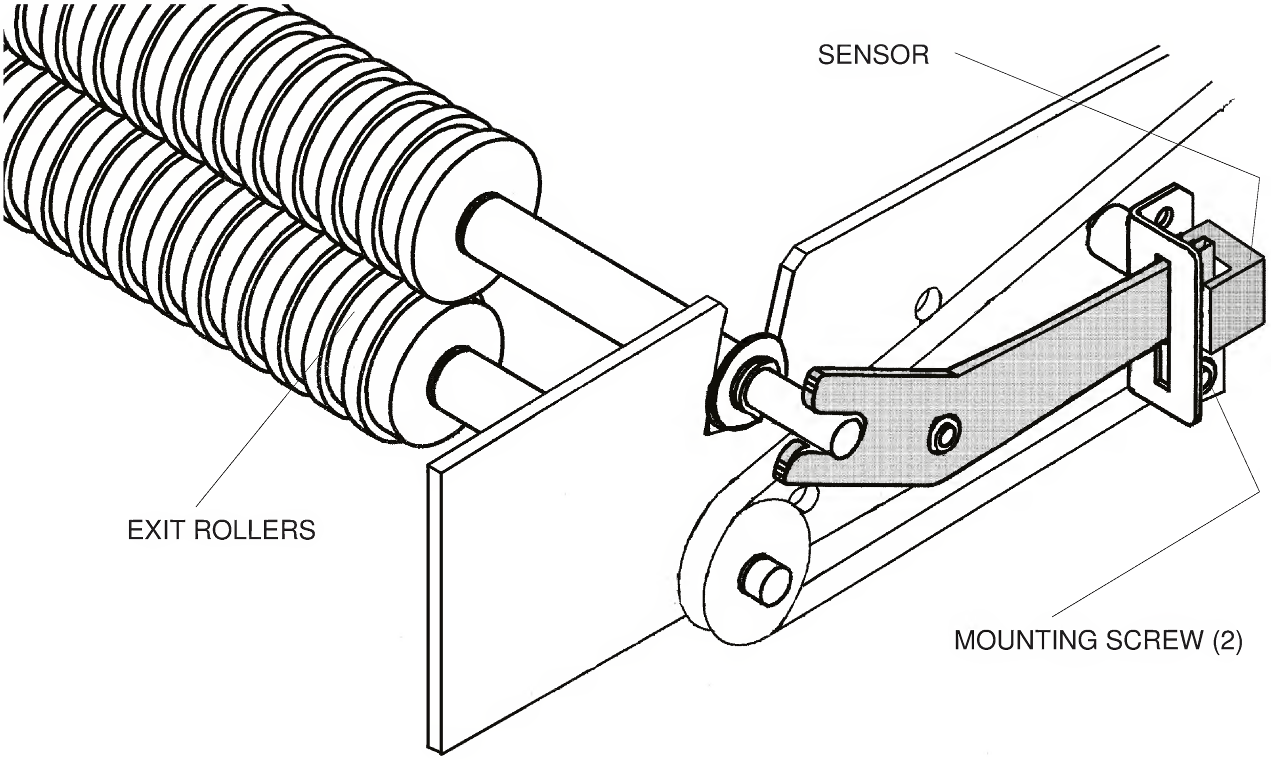


figure 3-82

10. Repeat step 9 with the FILM at the right-hand side. If there is no signal from SENSOR B25, loosen its MOUNTING SCREWS and move the SENSOR up or down as required. Fasten the MOUNTING SCREWS.

11. Repeat step 9 with the FILM at the left-hand side. If there is no signal from SENSOR B26, loosen its MOUNTING SCREWS and move the SENSOR up or down as required. Fasten the MOUNTING SCREWS.

12. If you had to change the position of a SENSOR in step 10 or 11, go back to step 7.

13. Exit the SERVICE PROGRAM and disconnect the LAP TOP COMPUTER.

14. Mount the PROCESSOR INTERFACE and the REAR PANEL in place.

FINAL TEST

1. Run a few test cycles with different cassette sizes.

ADJUSTMENT SENSOR B24

PURPOSE:

To avoid false error code C74 if SENSOR B2/C_IN_R2 is triggered by hand or if a curved CASSETTE is pulled out.

Note

To enable SENSOR B24/C_IN_R2 SWITCH S2 on PCB A(must be in the upper position.

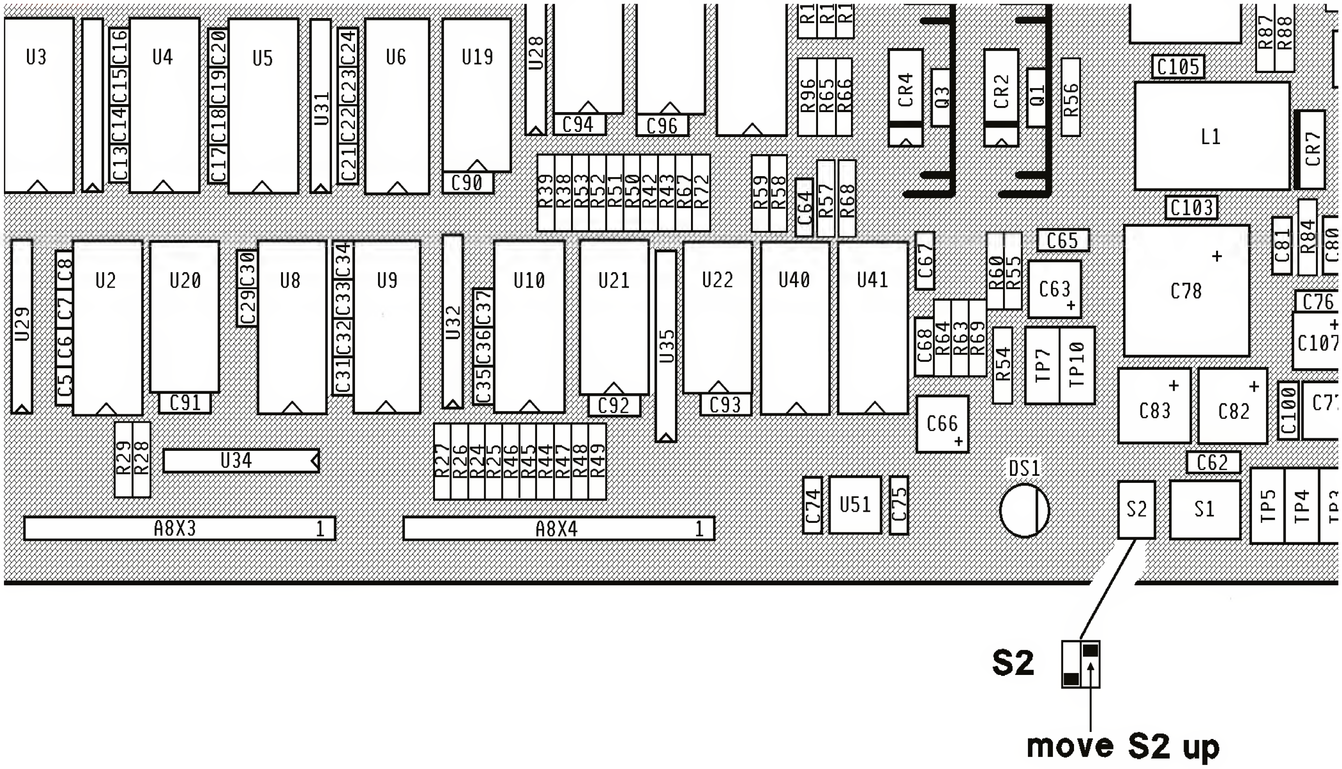

U3
U4
U5
U6
U19
U28
U31
C94
C96
C90
CR4
Q3
CR2
Q1
R56
C105
L1
CR7
C103
U29
U2
U20
U8
U9
U32
U10
U21
U35
U22
U40
U41
C67
C65
C63
C78
C81
R84
C76
C107
C68
R64
R63
R69
R54
TP7
TP10
C83
C82
C100
C91
C92
C93
C66
U34
C62
DS1
C74
U51
C75
S2
S1
TP5
TP4
A8X3
A8X4
S2
move S2 up

figure 3-83

1. Open the TOP COVER of the ML300.

2. Start the SENSOR TEST

   Key in START..press ENTER
   Select SERVICE MODE ML300........................press ENTER
   ENTER SERVICE MODE MESSAGE is displayed..........Press ENTER
   UNIT DATA are displayed...........................press ENTER
   Select COMPONENT TEST.............................press ENTER
   Select SENSORS....................................press ENTER
   Select SENSOR TEST with sound.....................press ENTER

3. Loosen both SENSOR MOUNTING SCREWS.

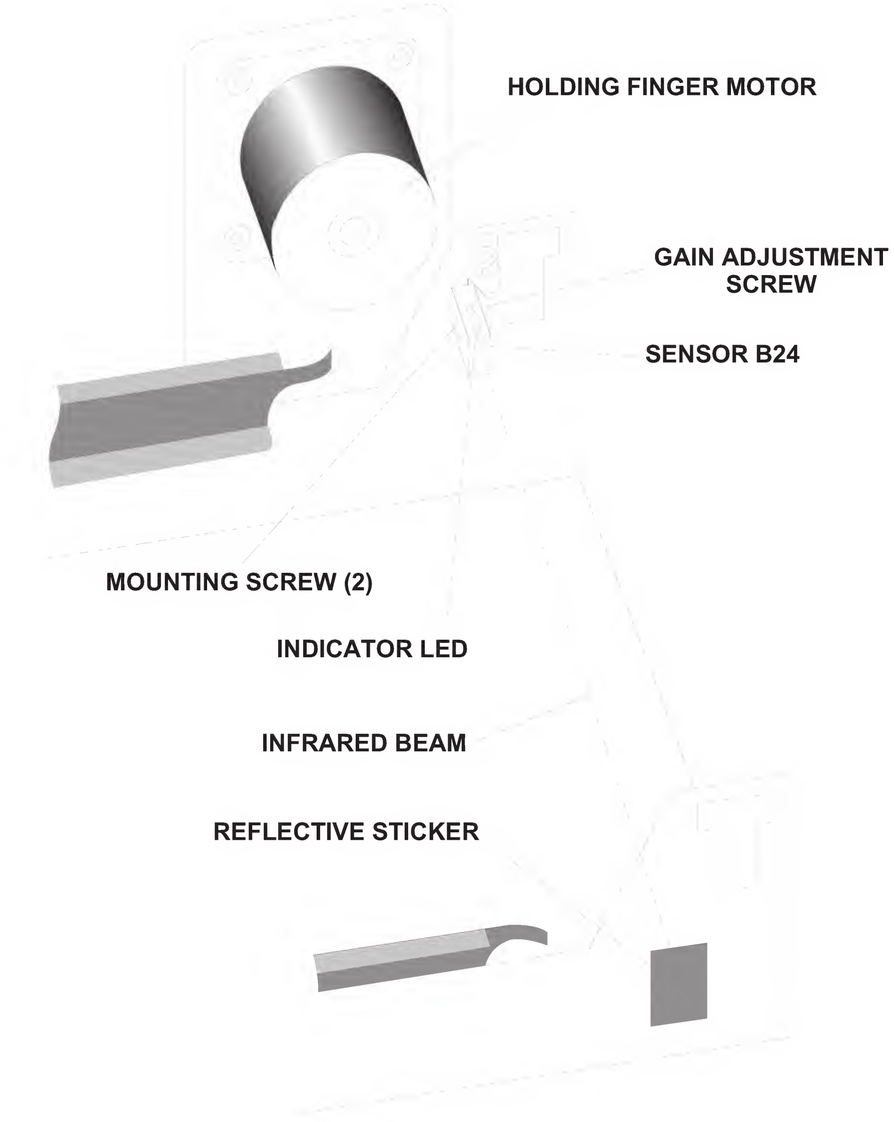

HOLDING FINGER MOTOR
GAIN ADJUSTMENT SCREW
SENSOR B24
MOUNTING SCREW (2)
INDICATOR LED
INFRARED BEAM
REFLECTIVE STICKER

figure 3-84

4. Turn the GAIN ADJUSTMENT SCREW of SENSOR B24 fully clockwise.

5. Move the SENSOR up and down until its infrared beam is reflected by the reflective foil. This turns the INDICATOR LED green.

6. Fasten both SENSOR MOUNTING SCREWS.

7. Turn the GAIN ADJUSTMENT SCREW counter-clockwise until the LED turns red. Turn the ADJUSTMENT SCREW clockwise, until the LED is turned on safely.

8. Check that the SENSOR TEST beeps when the infrared beam becomes interrupted.

9. Exit the SERVICE MODE.

   Press BACKSPACE three times
   Select LEAVE COMPONENT TEST .... press ENTER
   Select QUIT ML300 SERVICE MODE .... press ENTER
   Select QUIT THE PROGRAM .... press ENTER

10. Close the TOP COVER.

ADJUSTMENT PCB A10

PURPOSE:

This adjustment ensures that count pulses and signal for direction are generated correctly.

Note

If a new PCB A10 is installed in a XML300 with SN < 3368, the CODE DISC which is packed with the new PCB A10 must be installed too. PCB A10 9228620 works only with the new style CODE DISK packed with it.

For adjustment details see the drawing on the next page.

1. If the distance of 21.3 mm is not correct, loosen the MOUNTING SCREW of the PCB HOLDER and move it as required. Fasten the MOUNTING SCREW.

Note

Not all PCB A10 are working correctly when the gap is set to 1.2 mm. Especially with the old style PCBs the gap should not be bigger than 0.5 mm.

2. If the distance of max. 1.2 mm between CODE DISK and RECEIVER SIDE of the SENSOR is not correct, loosen the MOUNTING SCREWS of PCB A10 and move it as required.

3. If the PCB cannot be moved far enough sideways, take it out and **carefully** elongate the holes for the MOUNTING SCREWS with a file.

4. Fasten the MOUNTING SCREWS.

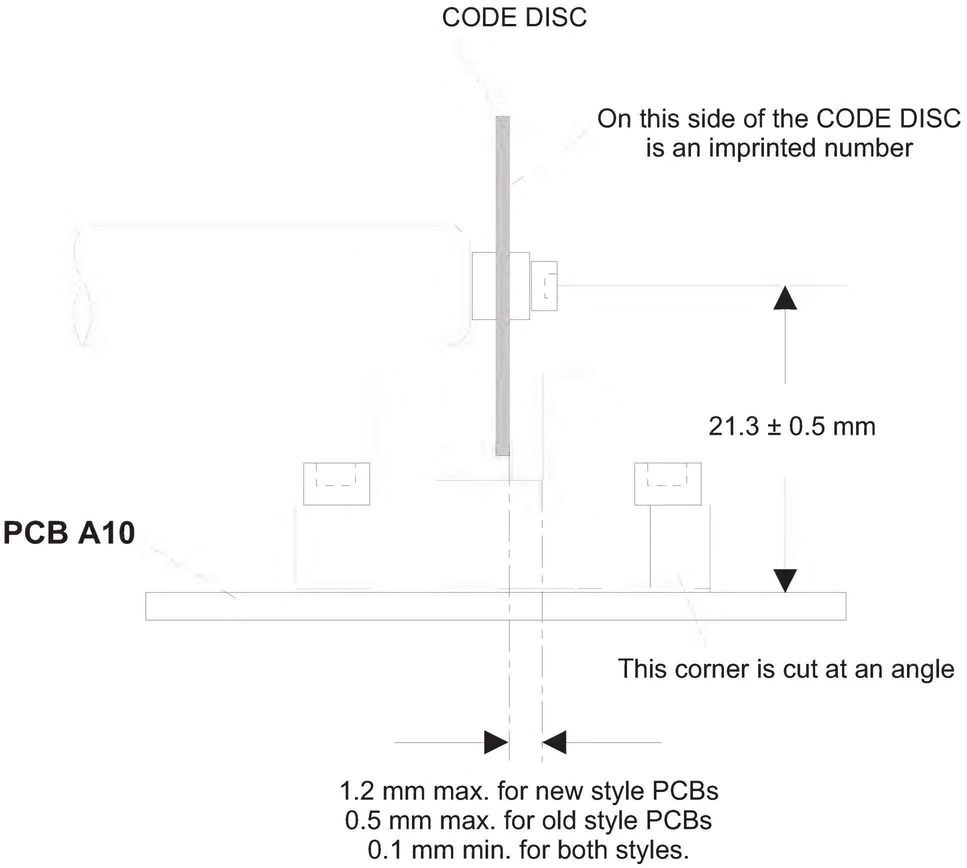

CODE DISC
On this side of the CODE DISC is an imprinted number
21.3 ± 0.5 mm
PCB A10
This corner is cut at an angle
1.2 mm max. for new style PCBs
0.5 mm max. for old style PCBs
0.1 mm min. for both styles.

figure 3-85

FUNCTION TEST

Note

There are 3 PCB A10

- CASSETTE OPENER
- CASSETTE HOLDING FINGER
- CASSETTE CENTRING

1. Run a few cycles with different CASSETTE SIZES and check for correct operation.

4. PARAMETER

INTRODUCTION

The purpose of the PARAMETERS is to optimise the function of the ML300. There are 2 types of PARAMETERS. The value of the first type ends with an H (for example 18H) and the second type ends with a D (for example 15D). The H means this is a hexa-decimal value. The D means this is a decimal value. Only the PARAMETERS with hexa-decimal value can be altered just by keying in a new value. The 3 PARAMETERS with decimal values can only be altered by starting a special option.

PARAMETER	**CHANGE WITH OPTION**
CASSETTE-OFFSET	CASSETTE-LENGTH
MAGAZINE LEVEL	SCAN RUN
HOME POSITION	SCAN RUN
GEAR BACKLASH	SCAN RUN
NEARLY EMPTY	NEARLY EMPTY

For the hexa-decimal PARAMETERS an allowed range exists.
For example LOWER POCKET:

RANGE	0h....64h
DEFAULT	40h

This means every value between 0h and 64h can be used. It does not mean that with every value the ML300 works best. In general the ML300 works best with the DEFAULT (or STANDARD) setting. If a value outside the range is used and ENTER is pressed, the displayed value will default automatically to the DEFAULT VALUE.
The range is different for every PARAMETER.

HOW TO SET A PARAMETER

In this section it is explained with every PARAMETER, how to use the CES SERVICE SOFTWARE. The first line tells always what should be performed. In the next lines it is explained how to reach this goal. These additional explanations are printed *italic* and can be skipped if you are experienced with the CES SERVICE SOFTWARE.

EXAMPLE:

1. Change PARAMETER XYZ

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed... press ENTER
UNIT DATA are displayed .... press ENTER
Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select PARAMETER XYZ
Key in the new value... press ENTER

Note

It is very important to STORE PARAMETERS. If this is not done only the DISPLAY of the LAP TOP shows the new values. However they are not transferred into the battery backed up memory of the ML300.

Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

Press BACKSPACE twice

Select QUIT ML300 SERVICE MODE .... press ENTER

Select Quit the program .... press ENTER

CASSETTE UNIT

VACUUM OFF TIME

PURPOSE:

To turn off the CASSETTE SUCKERS VACUUM at the correct time.

The CASSETTE SUCKER BAR picks up the exposed FILMS from the CASSETTE. As soon as SENSOR B20 VACUUM OFF detects the LEADING EDGE of the FILM, the VACUUM OFF TIME is started. When this time is terminated the vacuum is released and the FILM is picked up by the TRANSPORT ROLLERS.

1 increment = 10 msec

RANGE:	**0h...Fh**
DEFAULT:	**08h**

1. Start CHANGE PARAMETER.

Start the SERVICE PROGRAM

Select SERVICE MODE from the GLOBAL MENU .... press ENTER

ENTER SERVICE MODE MESSAGE is displayed .... press ENTER

UNIT DATA are displayed .... press ENTER

Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER

Select CHANGE PARAMETER .... press ENTER

Select VACUUM OFF TIME

Key in the new value .... press ENTER

Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

Press BACKSPACE twice

Select QUIT ML300 SERVICE MODE .... press ENTER

Select Quit the program .... press ENTER

BLOW TIME

PURPOSE:

To separate the FILM from the LID SCREEN.

The CASSETTE OPENER opens the CASSETTE and a stream of air separates the FILM from the LID SCREEN.

Note

This PARAMETER is only active, when the CASSETTE OPENER is in the BLOW POSITION.

1 increment = 10 msec

RANGE:	**0h...FFh**
DEFAULT:	**64h**

1. Change BLOW TIME.

Start the SERVICE PROGRAM

Select SERVICE MODE from the GLOBAL MENU .... press ENTER

ENTER SERVICE MODE MESSAGE is displayed .... press ENTER

UNIT DATA are displayed .... press ENTER

Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER

Select CHANGE PARAMETER .... press ENTER

Select BLOW TIME .... press ENTER

Key in the new value .... press ENTER

Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

Press BACKSPACE twice

Select QUIT ML300 SERVICE MODE .... press ENTER

Select Quit the program .... press ENTER

CASSETTE OFFSET

PURPOSE:

To measure the correct CASSETTE LENGTH.

When the FUNCTION “CASSETTE LENGTH” is started, a CASSETTE with a known length is put into the XML 300. The program compares the known length against the amount of CENTRING STEPS and calculates the necessary offset. From now on this offset is used to determine the correct CASSETTE SIZE.

Note

Use the smallest CASSETTE available. (18x24cm)

1. Start CASSETTE LENGTH.

Start the SERVICE PROGRAM

Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT DATA are displayed .... press ENTER
Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select CASSETTE LENGTH .... press ENTER
Key in the measured CASSETTE LENGTH.. press ENTER
Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.
Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE.. press ENTER
Select Quit the program .... press ENTER

DISABLE OPENER

Purpose:

Up to SN 1027 on PCB A9 a weak power regulator was used. It could not drive the CASSETTE OPENER MOTOR M5 and the CASSETTE INPUT MOTOR M2 at the same time. To avoid a stop during the infeed of a CASSETTE the PARAMETER DISABLE OPENER has to be set to AA for those PCB's. The old style PCB's can be identified by 2 big coils.

NEW PCB	**00h**
OLD PCB	**AAh**

1. Change PARAMETER DISABLE OPENER.
Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT DATA are displayed .... press ENTER
Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select DISABLE OPENER.. press ENTER
Key in 00 or AA.. press ENTER
Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.
Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE.. press ENTER
Select Quit the program .... press ENTER

CASSETTE OPEN / RETURN

PURPOSE:

The function to return an empty CASSETTE open can be disabled with this PARAMATER.

Note

In case of problems, set this PARAMETER to 00.

- 00 = An empty CASSETTE is closed before it is transported out. (DEFAULT)
- 01 = An empty CASSETTE will be returned open.

1. Disable the FILM CHUTE.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select CASS OPEN RETURN .... press ENTER

2. Exit the SERVICE PROGRAM.

Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

DISABLE INTERFACE

Purpose:

It allows to run the ML300 with the FILM CHUTE rotated out. This feature is important when you want to observe the function of the FILM POCKET.

- Use this PARAMETER during service only.
- **Use ML300 with FILM CHUTE in place 00h**
- **Use ML300 with FILM CHUTE rotated out AAh**
- Do not forget to set this PARAMETER to 00 before you hand over the ML300 to the customer. Otherwise error IC2 will occur and an exposed film will be lost.

1. Disable the FILM CHUTE.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER

Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select DISABLE INTERF .... press ENTER
Key in ***AA*** *............................. press ENTER*
Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

MAGAZINE UNIT

TILT POSITION

PURPOSE:

To separate the FILMS in the MAGAZINE.

This PARAMETER gives the distance in steps, the FILM POCKET SUCKER BAR has to move up from the top of the FILM STACK after an unexposed FILM was picked up. After the TILT POSITION is reached, the FILM POCKET SUCKER BAR is tilted back. This separates the top FILM from the remaining FILMS in the MAGAZINE.

1 increment = 0.09mm

RANGE: **0h...46h**
DEFAULT: **14h**

1. Change the PARAMETER TILT POSITION.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select TILT POSITION .... press ENTER
Key in the new value ***............................. press ENTER***
Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

ADDITIONAL STEPS

PURPOSE:

To achieve good contact between MAGAZINE SUCKERS and the top FILM in the MAGAZINE. This PARAMETER gives the number of additional steps after the FILM PIN reached the top FILM in the MAGAZINE. This ensures that the SUCKERS are in close contact with the top FILM.

Note

If too many ADDITIONAL STEPS are used PRESSURE MARKS on the FILM may show up.

1 increment = 0.09mm

RANGE: **0h...1Eh**

DEFAULT: **0Ah**

1. Change the PARAMETER ADDITIONAL STEPS.

   Start the SERVICE PROGRAM
   Select SERVICE MODE from the GLOBAL MENU .... press ENTER
   ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
   UNIT DATA are displayed .... press ENTER
   Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
   Select CHANGE PARAMETER .... press ENTER
   Select ADDITIONAL STEPS .... press ENTER
   Key in the new value **.................... *press ENTER***
   Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

   Press BACKSPACE twice
   Select QUIT ML300 SERVICE MODE .... press ENTER
   Select Quit the program .... press ENTER

LOWER POCKET

PURPOSE:

To place the unexposed FILM correctly into the CASSETTE.

Additional down-steps for the FILM POCKET SUCKER BAR into the CASSETTE. It prevents the unexposed FILM from floating out of the CASSETTE.

Note

In the OPERATING SOFTWARE VERSION 3.0, this PARAMETER is ignored for VIDEO FILM HOLDERS.

1 increment = 0.09mm

RANGE: **0h...64h**

DEFAULT: **34h**

1. Change the PARAMETER LOWER POCKET ST.

   Start the SERVICE PROGRAM
   Select SERVICE MODE from the GLOBAL MENU .... press ENTER
   ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
   UNIT DATA are displayed .... press ENTER
   Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
   Select CHANGE PARAMETER .... press ENTER
   Select LOWER POCKET ST. .... press ENTER
   Key in the new value .... press ENTER
   Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

   Press BACKSPACE twice
   Select QUIT ML300 SERVICE MODE .... press ENTER
   Select Quit the program .... press ENTER

MAGAZINE LEVELS.

Purpose:

These values are used to transport the FILM POCKET to the correct level. One increment is equal to 0.09 mm.

The VALUES in the table differ from ML300 to ML300. They depend on the position of the LEVEL BRACKETS. This means if the ML300 works correct and if the values given by the Lap Top are within the range, than everything seems to be correct. However if the position of 1 of the LEVEL BRACKETS was changed a SCAN RUN must be performed.

Note

After a SCAN RUN was performed do the nearly empty adjustment.

	EXAMPLE	RANGE
MAG. LEVEL 1	1504	1400-1700
MAG. LEVEL 2	2597	2500-2800
MAG. LEVEL 3	3696	3600-3900
HOME POSITION		2597
GEAR BACKLASH		00006

To change these values start the OPTION SCAN RUN of CHANGE PARAMETERS.

1. Start the SCAN RUN.

   Start the SERVICE PROGRAM
   Select SERVICE MODE from the GLOBAL MENU .... press ENTER
   ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
   UNIT DATA are displayed .... press ENTER
   Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER

Select CHANGE PARAMETER .... press ENTER
Select SCAN RUN .... press ENTER
Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

NEARLY EMPTY.

To change the value start the OPTION **NEARLY EMPTY** of CHANGE PARAMETER.

Note

A MAGAZINE with 8 FILMS should be used in MAGAZINE LEVEL 2

1. Start NEARLY EMPTY.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed .... press ENTER
UNIT DATA are displayed .... press ENTER
Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select NEARLY EMPTY .... press ENTER
Follow the instructions displayed
Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE .... press ENTER
Select Quit the program .... press ENTER

DOUBLE FILM DETECTION

PURPOSE:

The DOUBLE FILM DETECTOR above SN 3000 is able to discriminate between:

- no FILM
- 1 FILM
- more than 1 FILM
-

Note

This PARAMETER should be set during installation. SERVICE SOFTWARE 3.30 or higher is required.

1. Start NEARLY EMPTY.

Start the SERVICE PROGRAM
Select SERVICE MODE from the GLOBAL MENU .... press ENTER
ENTER SERVICE MODE MESSAGE is displayed.. press ENTER
UNIT DATA are displayed .... press ENTER
Select CHANGE ML300 DATA from the MAIN MENU .... press ENTER
Select CHANGE PARAMETER .... press ENTER
Select DOUBLE SHEET DET .... press ENTER
Key in the new value... press ENTER
Select STORE PARAMETER .... press ENTER

2. Exit the SERVICE PROGRAM.

Press BACKSPACE twice
Select QUIT ML300 SERVICE MODE.. press ENTER
Select Quit the program .... press ENTER

CONVERSION TABLES

HEXADECIMAL to DECIMAL

The HEXADECIMAL-SYSTEM is a method to display numbers from 0 to 255 with just 2 digits. The base of this system is 16 (it is 10 for the decimal system). In a written text a hexadecimal number is marked with the suffix h. For example 76h.

To convert a hexademial number to decimal, use the following procedure:

EXAMPLE: 76h
Select 7 in the top horizontal row.
Draw a vertical line.
Select 6 in the left-hand column.
Draw a horizontal line.
The 2 lines are crossing at the decimal number 118

To convert a decimal number to hexadecimal, use the following procedure:

EXAMPLE: 169
Draw a vertical from 169 to the top row. It crosses the top row at A.
Draw a horizontal line from 169 to the left-hand column. It crosses the column at 9.
The result is A9h.

HEXADECIMAL to DECIMAL

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
1	1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
2	2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
3	3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
4	4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
5	5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
6	6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
7	7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
8	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
9	9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249
A	10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
B	11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251
C	12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252
D	13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253
E	14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254
F	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255

HEXADECIMAL to TIME.

1 increment = 0.01 seconds

	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0.00	0.16	0.32	0.48	0.64	0.80	0.96	1.12	1.28	1.44	1.60	1.76	1.92	2.08	2.24	2.40
1	0.01	0.17	0.33	0.49	0.65	0.81	0.97	1.13	1.29	1.45	1.61	1.77	1.93	2.09	2.25	2.41
2	0.02	0.18	0.34	0.50	0.66	0.82	0.98	1.14	1.30	1.46	1.62	1.78	1.94	2.10	2.26	2.42
3	0.03	0.19	0.35	0.51	0.67	0.83	0.99	1.15	1.31	1.47	1.63	1.79	1.95	2.11	2.27	2.43
4	0.04	0.20	0.36	0.52	0.68	0.84	1.00	1.16	1.32	1.48	1.64	1.80	1.96	2.12	2.28	2.44
5	0.05	0.21	0.37	0.53	0.69	0.85	1.01	1.17	1.33	1.49	1.65	1.81	1.97	2.13	2.29	2.45
6	0.06	0.22	0.38	0.54	0.70	0.86	1.02	1.18	1.34	1.50	1.66	1.82	1.98	2.14	2.30	2.46
7	0.07	0.23	0.39	0.55	0.71	0.87	1.03	1.19	1.35	1.51	1.67	1.83	1.99	2.15	2.31	2.47
8	0.08	0.24	0.40	0.56	0.72	0.88	1.04	1.20	1.36	1.52	1.68	1.84	2.00	2.16	2.32	2.48
9	0.09	0.25	0.41	0.57	0.73	0.89	1.05	1.21	1.37	1.53	1.69	1.85	2.01	2.17	2.33	2.49
A	0.10	0.26	0.42	0.58	0.74	0.90	1.06	1.22	1.38	1.54	1.70	1.86	2.02	2.18	2.34	2.50
B	0.11	0.27	0.43	0.59	0.75	0.91	1.07	1.23	1.39	1.55	1.71	1.87	2.03	2.19	2.35	2.51
C	0.12	0.28	0.44	0.60	0.76	0.92	1.08	1.24	1.40	1.56	1.72	1.88	2.04	2.20	2.36	2.52
D	0.13	0.29	0.45	0.61	0.77	0.93	1.09	1.25	1.41	1.57	1.73	1.89	2.05	2.21	2.37	2.53
E	0.14	0.30	0.46	0.62	0.78	0.94	1.10	1.26	1.42	1.58	1.74	1.90	2.06	2.22	2.38	2.54
F	0.15	0.31	0.47	0.63	0.79	0.95	1.11	1.27	1.43	1.59	1.75	1.91	2.07	2.23	2.39	2.55

HEXADECIMAL TO DISTANCE

1 increment = 0.09mm

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0.00	1.44	2.88	4.32	5.76	7.20	8.64	10.08	11.52	12.95	14.40	15.84	17.28	18.72	20.16	21.60
1	0.09	1.53	2.97	4.41	5.85	7.29	8.73	10.17	11.61	13.05	14.49	15.93	17.37	18.81	20.25	21.69
2	0.18	1,62	3.06	4.50	5.94	7.38	8.82	10.26	11.70	13.14	14.58	16.02	17.46	18.90	20.34	21.78
3	0.27	1.71	3.15	4.59	6.03	7.47	8.91	10.35	11.79	13.23	14.67	16.11	17.55	18.99	20.43	21.87
4	0.36	1.80	3.24	4.68	6.12	7.56	9.00	10.44	11.88	13.32	14.76	16.20	17.64	19.08	20.52	21.96
5	0.45	1.89	3.33	4.77	6.21	7.65	9.09	10.53	11.97	13.41	14.85	16.29	17.73	19.17	20.61	22.05
6	0.54	1.98	3.42	4.86	6.30	7.74	9.18	10.62	12.06	13.50	14.94	16.38	17.82	19.26	20.70	22.14
7	0.63	2.07	3.51	4.95	6.39	7.83	9.27	10.71	12.15	13.59	15.03	16.47	17.91	19.35	20.79	22.23
8	0.72	2.16	3.60	5.04	6.48	7.92	9.36	10.80	12.24	13.68	15.12	16.56	18.00	19.44	20.88	22.32
9	0.81	2.25	3,69	5.13	6.57	8.01	9.45	10.89	12.33	13.77	15.21	16.65	18.09	19.53	20.97	22.41
A	0.90	2.34	3.78	5,22	6.66	8.10	9.54	10.98	12.42	13.86	15.30	16.74	18.18	19.62	21.06	22.50
B	0.99	2.43	3.87	5,31	6.75	8.19	9.63	11.07	12.51	13.95	15.39	16.83	18.27	19.71	21.15	22.59
C	1.08	2.52	3.96	5.40	6.84	8.28	9.72	11.16	12.60	14.04	15.48	16.92	18.36	19.80	21.24	22.68
D	1.17	2.61	4.05	5.49	6.93	8.37	9.81	11.25	12.69	14.13	15.57	17.01	18.45	19.89	21.33	22.77
E	1.26	2.70	4.14	5.58	7.02	8.46	9.90	11.34	12.78	14.22	15.66	17.10	18.54	19.98	21.42	22.86
F	1.35	2.79	4.23	5.67	7.11	8.55	9.99	11.43	12.87	14.31	15.75	17.19	18.63	20.07	21.51	22.95

5. RESIZING MAGAZINES

The following SIZE CONFIGURATIONS are possible:

18 x 24 cm X-OMATIC FILM
18 x 24 cm MAMMOGRAPHY FILM
18 x 43 cm X-OMATIC FILM
20 x 40 cm X-OMATIC FILM
24 x 24 cm X-OMATIC FILM
24 x 30 cm X-OMATIC FILM
24 x 30 cm MAMMOGRAPHY FILM
30 x 35 cm X-OMATIC FILM
30 x 40 cm X-OMATIC FILM
35 x 35 cm X-OMATIC FILM
35 x 43 cm X-OMATIC FILM
8 x 10 inch X-OMATIC FILM
8 x 10 inch CRT FILM
10 x 12 inch X-OMATIC FILM
11 X 14 inch X-OMATIC FILM

It is also possible to code each FILM SIZE from the list above as a TYPE 2 FILM to use two different TYPES OF FILMS of the same SIZE in the ML300.

To change MAGAZINE SIZES do the following:

1. Place the MAGAZINE on a flat surface with the BOTTOM up.

2. Use a TORX SCREW DRIVER PN 9901729 to remove the TORX SCREWS.

3. Install the CODE BRACKETS for the SIZE CODING according to figure 5-2.

4. Remove the TOP COVER of the MAGAZINE.

Note

Make sure that SEPARATOR Left and SEPARATOR Right are mounted correctly with the long STUD towards the HANDLE. OTHERWISE it is impossible to close the MAGAZINE and that all films fall out when the MAGAZINE is carried.

5. Place the SEPARATORS L, R and REAR in the RECESSES corresponding to the selected FILM SIZE. See the drawing on the next page. The RECESSES are marked with the FILM SIZE.

6. Install TOP COVER to the MAGAZINE.

7. Apply the correct FILM SIZE LABEL to the MAGAZINE.

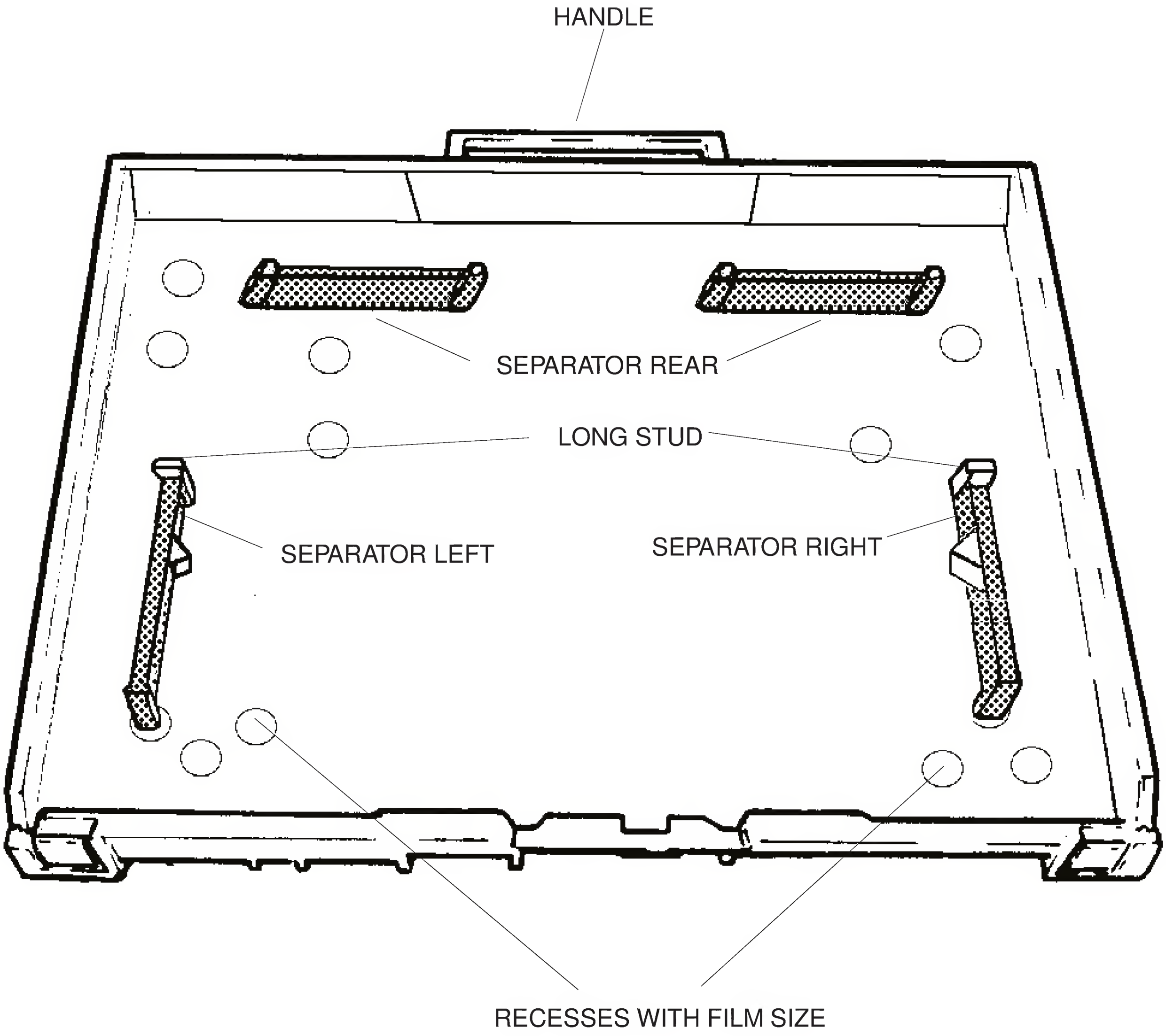
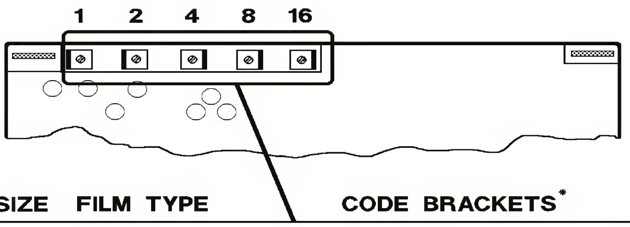

HANDLE
SEPARATOR REAR
LONG STUD
SEPARATOR LEFT
SEPARATOR RIGHT
RECESSES WITH FILM SIZE

figure 5-1



CASSETTE SIZE	FILM TYPE	CODE BRACKETS*					CODE Nº	
							TYPE 1	TYPE 2
18x24 cm	X-OMATIC FILM	▌○	○▐	○▐	○▐		1	17
18x24 cm	MAMMOGRAPHY FILM	○▐	○▐	○▐	▌○		8	24
18x43 cm	X-OMATIC FILM	▌○	○▐	○▐	▌○		9	25
20x40 cm	X-OMATIC FILM	▌○	○▐	▌○	▌○		13	29
24x24 cm	X-OMATIC FILM	○▐	▌○	○▐	○▐		2	18
24x30 cm	X-OMATIC FILM	○▐	▌○	○▐	▌○		10	26
24x30 cm	MAMMOGRAPHY FILM	▌○	▌○	○▐	▌○		11	27
30x35 cm	X-OMATIC FILM	○▐	▌○	▌○	○▐		6	22
30x40 cm	X-OMATIC FILM	○▐	▌○	▌○	▌○		14	30
35x35 cm	X-OMATIC FILM	○▐	○▐	▌○	○▐		4	20
35x43 cm	X-OMATIC FILM	○▐	○▐	▌○	▌○		12	28
8x10 inch	X-OMATIC FILM	▌○	○▐	▌○	○▐		5	21
8x10 inch	CRT FILM	▌○	▌○	○▐	○▐		3	19
10x12 inch	X-OMATIC FILM	▌○	▌○	▌○	▌○		15	31
11x14 inch	X-OMATIC FILM	▌○	▌○	▌○	○▐		7	23
		1	2	4	8	16		
TYPE 1 for all sizes						○▐		
TYPE 2 for all sizes						▌○		

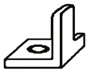
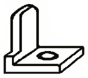
* CODE BRACKETS : ○▐ =  = 0 ▌○ =  = 1

figure 5-2

6. X-OMATIC CASSETTES

LATCH ADJUSTMENTS

For the adjustment of the CASSETTES see:
SERVICE MANUAL
for
Kodak X-Omatic CASSETTES
Publication No. SM 3126-1

TYPE2 CODING OF CASSETTES

Note

The coding of the CASSETTES is only necessary for TYPE 2 CASSETTES.

1. Place the REFLECTIVE STICKERS PN 9194551 on the CASSETTES as indicated on the following figures.

C1 CASSETTES

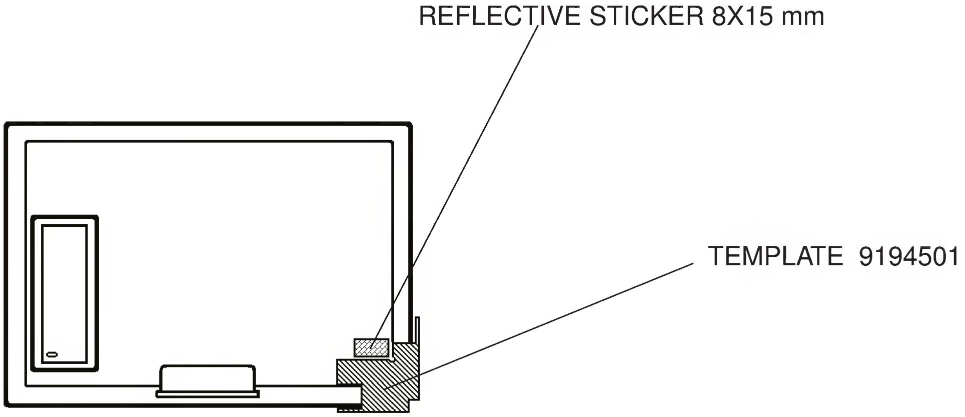

REFLECTIVE STICKER 8X15 mm
TEMPLATE 9194501

figure 6-1

C2 CASSETTES

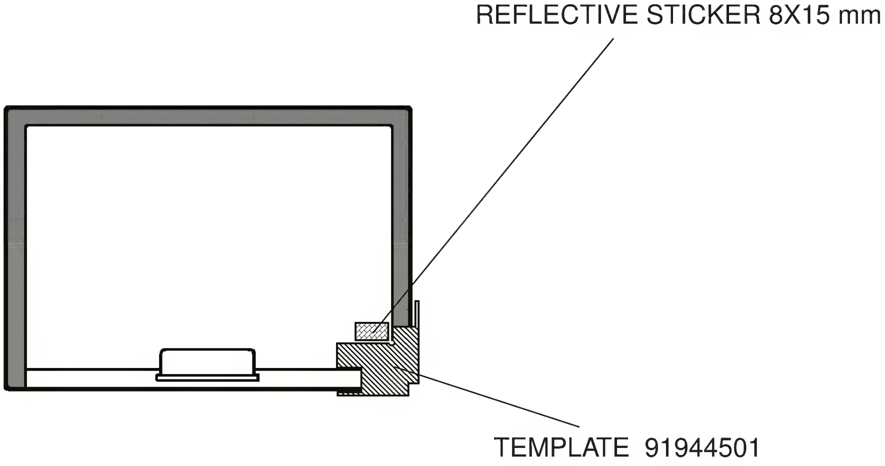

REFLECTIVE STICKER 8X15 mm
TEMPLATE 91944501

figure 6-2

C3 CASSETTES

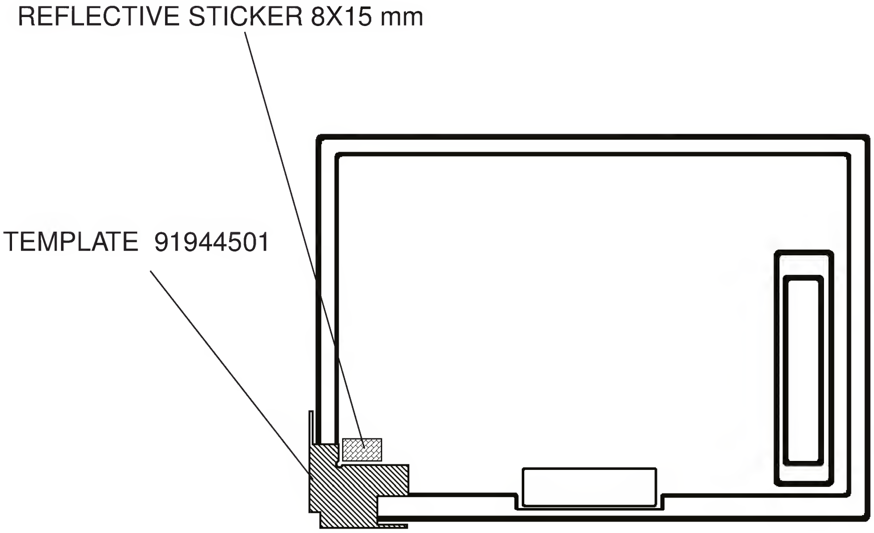

REFLECTIVE STICKER 8X15 mm
TEMPLATE 91944501

figure 6-3

MAMMO CASSETTES (MIN R 2)

Note

For TYPE 2 coding 2 reflective STICKERS have to be installed onto the MINR 2 CASSETTE.

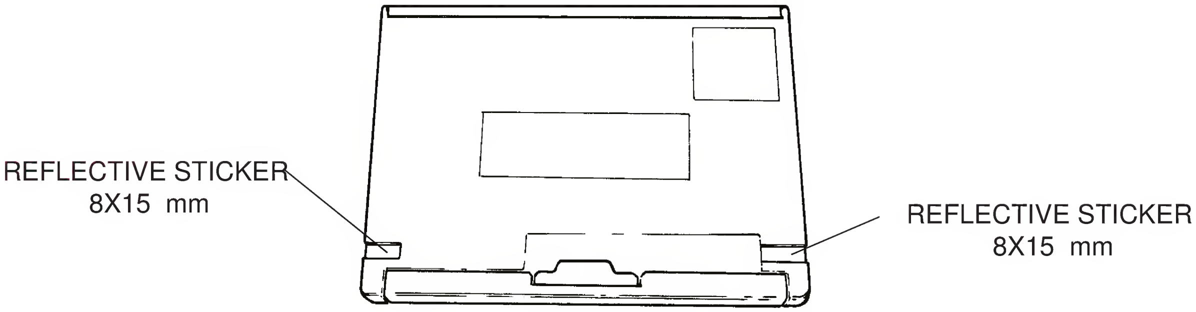

REFLECTIVE STICKER
8X15 mm
REFLECTIVE STICKER
8X15 mm

figure 6-4

VIDEO FILMHOLDERS

Note

The reflective STICKER can be placed on either side of the VIDEO FILMHOLDER. Use just one STICKER

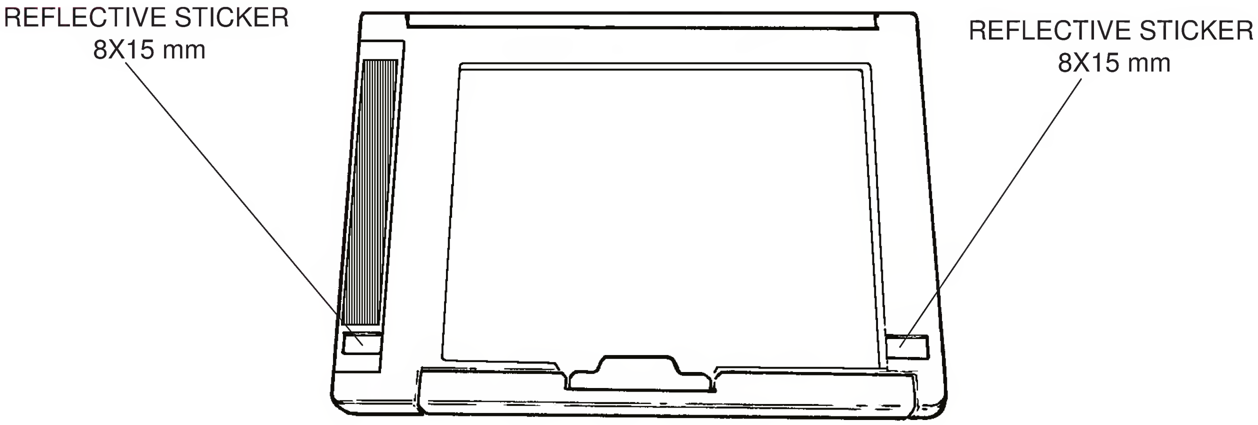

REFLECTIVE STICKER
8X15 mm
REFLECTIVE STICKER
8X15 mm

figure 6-5

7. Changes for XML300 with SN > 2000

CASSETTE OPENER

The previous CASSETTE OPENER was based on a ROTARY SOLENOID

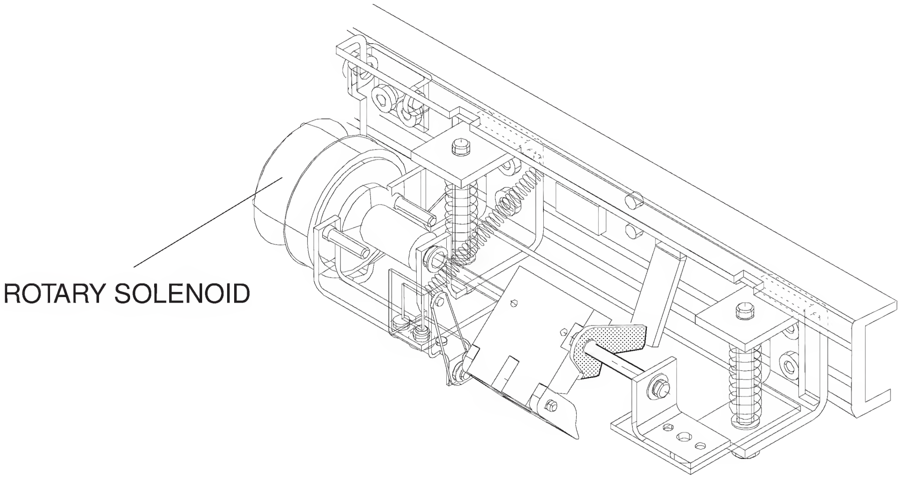

ROTARY SOLENOID

figure 7-1

The new version is based on a solenoid similar to the DOOR SOLENOID. This results in a completely new design of the CASSETTE OPENER MECHANISM.

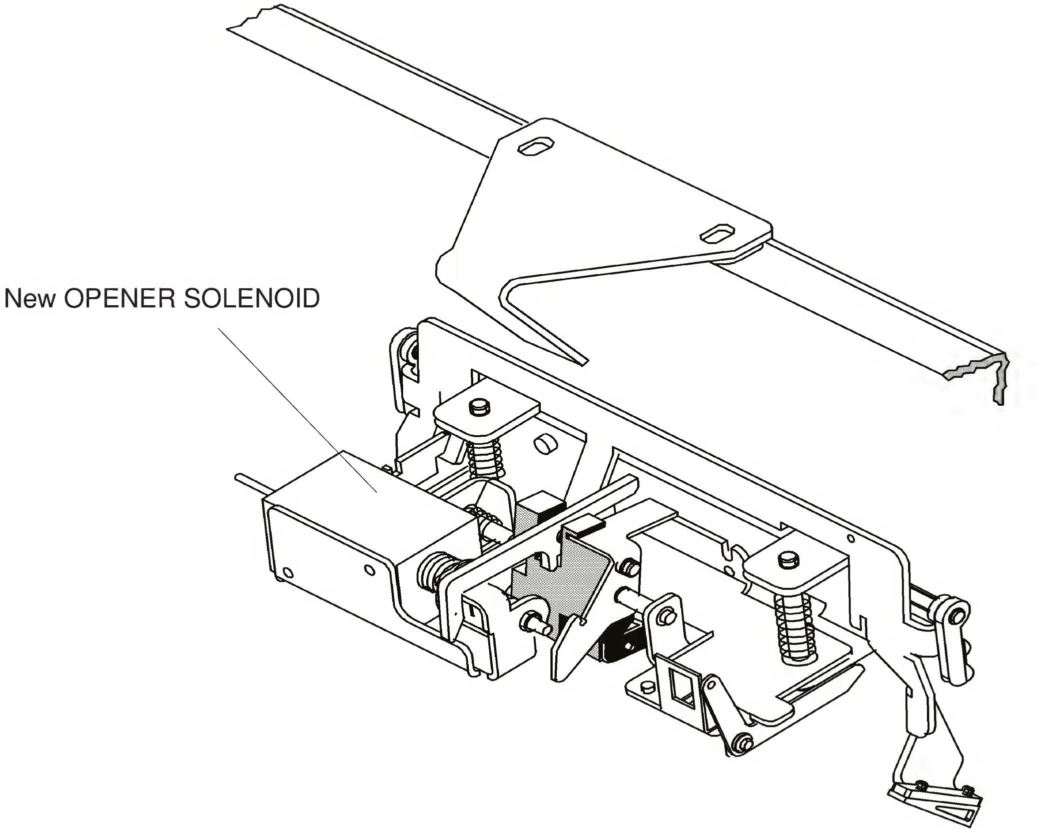

New OPENER SOLENOID

figure 7-2

When the CASSETTE OPENER is in the upper END POSITION, the RETAINER rides on the OPENER PIN. The MAIN SPRING and therefore the SHOVEL ASSEMBLY, is tensioned.

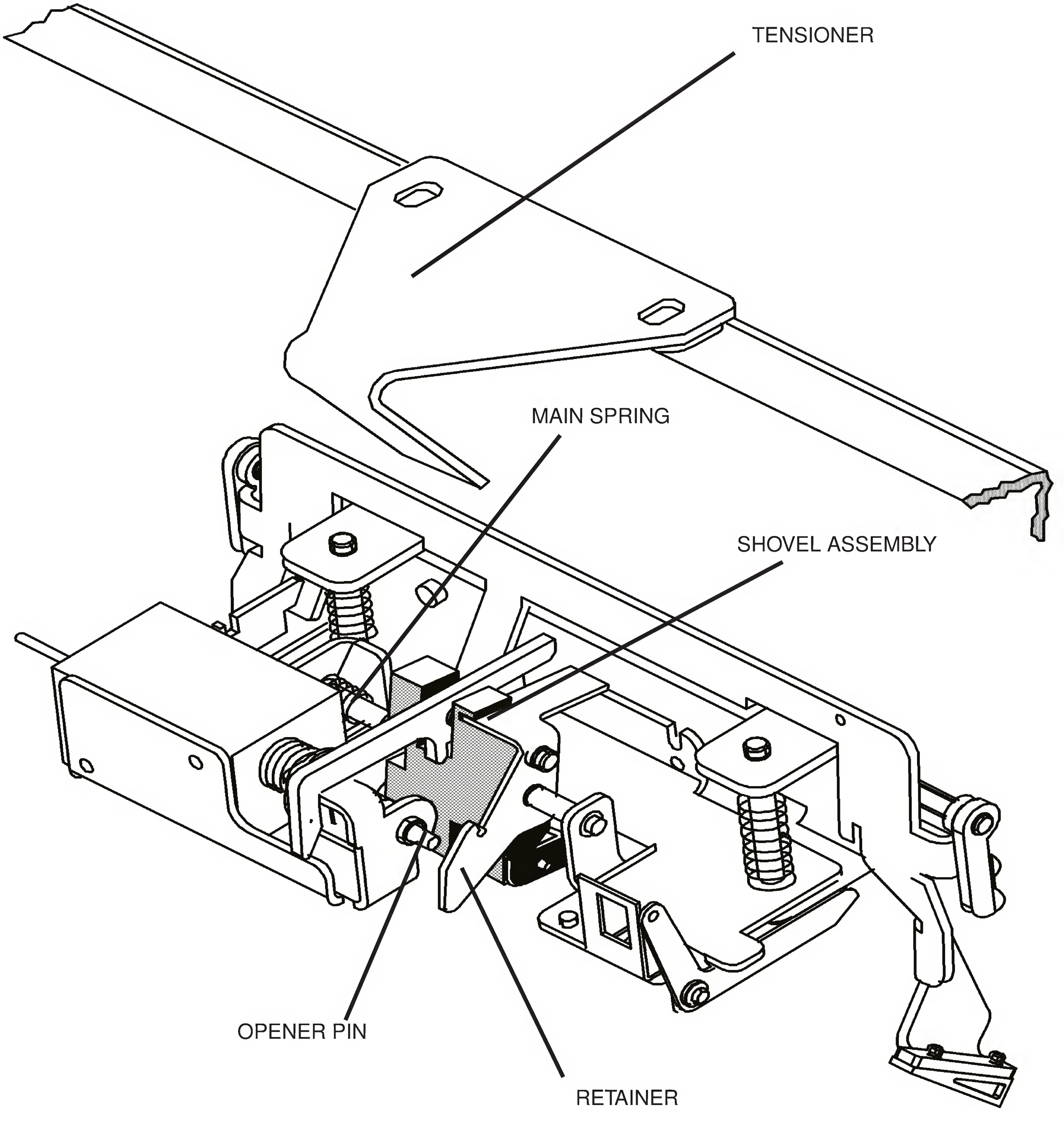

TENSIONER
MAIN SPRING
SHOVEL ASSEMBLY
OPENER PIN
RETAINER

figure 7-3

When a CASSETTE is fed in, the CASSETTE OPENER ASSEMBLY moves down. As soon as the GUIDE SHOES touch the rear wall of the CASSETTE TRANSPORT AREA (i.e. the wall where the 3 CASSETTE IN END SWITCHES are mounted), the CASSETTE HOOK ASSEMBLY is moved towards the FILM CHUTE. The CASSETTE HOOK ASSEMBLY becomes blocked by the LOCK PLATE. The CASSETTE OPENER ASSEMBLY goes further down to its bottom position, the PRESSURE BOLTS press on the CASSETTE to release the tension on the CASSETTE LATCH.

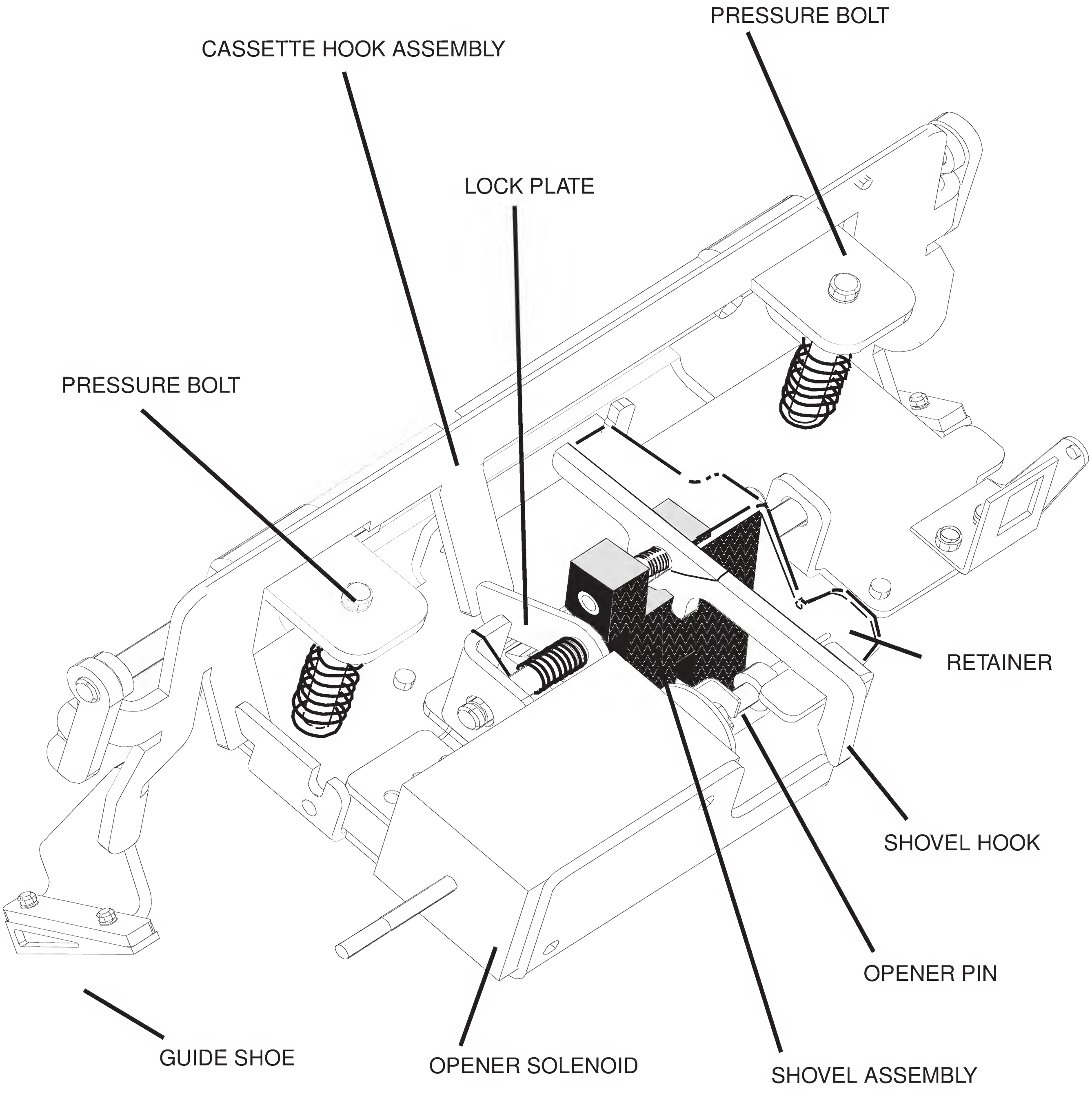

PRESSURE BOLT
CASSETTE HOOK ASSEMBLY
LOCK PLATE
PRESSURE BOLT
RETAINER
SHOVEL HOOK
OPENER PIN
GUIDE SHOE
OPENER SOLENOID
SHOVEL ASSEMBLY

figure 7-4

The OPENER SOLENOID becomes energised with a short pulse. The OPENER PIN is retracted and the tensioned SHOVEL ASSEMBLY shoots forward and opens the CASSETTE LATCH. The SHOVEL is now engaged in the CASSETTE LATCH. As the CASSETTE OPENER ASSEMBLY moves now upwards, the engaged SHOVEL lifts the CASSETTE LID. A short time later both the CASSETTE HOOKS (the CASSETTE HOOK ASSEMBLY became free when the OPENER SOLENOID was energised) catch the CASSETTE LID. The SHOVEL HOOK is a safety measure. It prevents the SHOVEL sliding out of the CASSETTE LATCH. The CASSETTE OPENER ASSEMBLY moves to its upper END POSITION. When it moves upward the TENSIONER holds down the rear end of the SHOVEL HOOK and of the SHOVEL ASSEMBLY. This causes the RETAINER to pivot up. The spring loaded OPENER PIN slides under the RETAINER and the SHOVEL ASSEMBLY is tensioned again. The SHOVEL slides out of the CASSETTE LATCH. However the CASSETTE LID is still held in position by the CASSETTE HOOK ASSEMBLY.

To close the CASSETTE, the CASSETTE OPENER ASSEMBLY moves fully down. As soon as the GUIDE SHOES reaches the rear wall of the CASSETTE TRANSPORT AREA, the CASSETTE HOOK ASSEMBLY is moved towards the FILM CHUTE. This frees the CASSETTE LID. The CASSETTE OPENER ASSEMBLY moves further down and the CASSETTE HOOK ASSEMBLY becomes blocked by the LOCK PLATE. If the CASSETTE is loaded with a fresh FILM, the CASSETTE OPENER ASSEMBLY goes to its very bottom position to close the CASSETTE. If the CASSETTE is empty the OPENER ASSEMBLY just goes to the CASSETTE EMPTY POSITION and the CASSETTE is not closed.

The CASSETTE is now transported out of the XML300. The CASSETTE OPENER ASSEMBLY goes to its upper end position.

FILM TYPE 2 SENSOR MOUNT

The MOUNTING of the TYPE 2 SENSOR is changed. The new SENSOR MOUNT is more rigid and it is easier to adjust the position of the SENSOR.

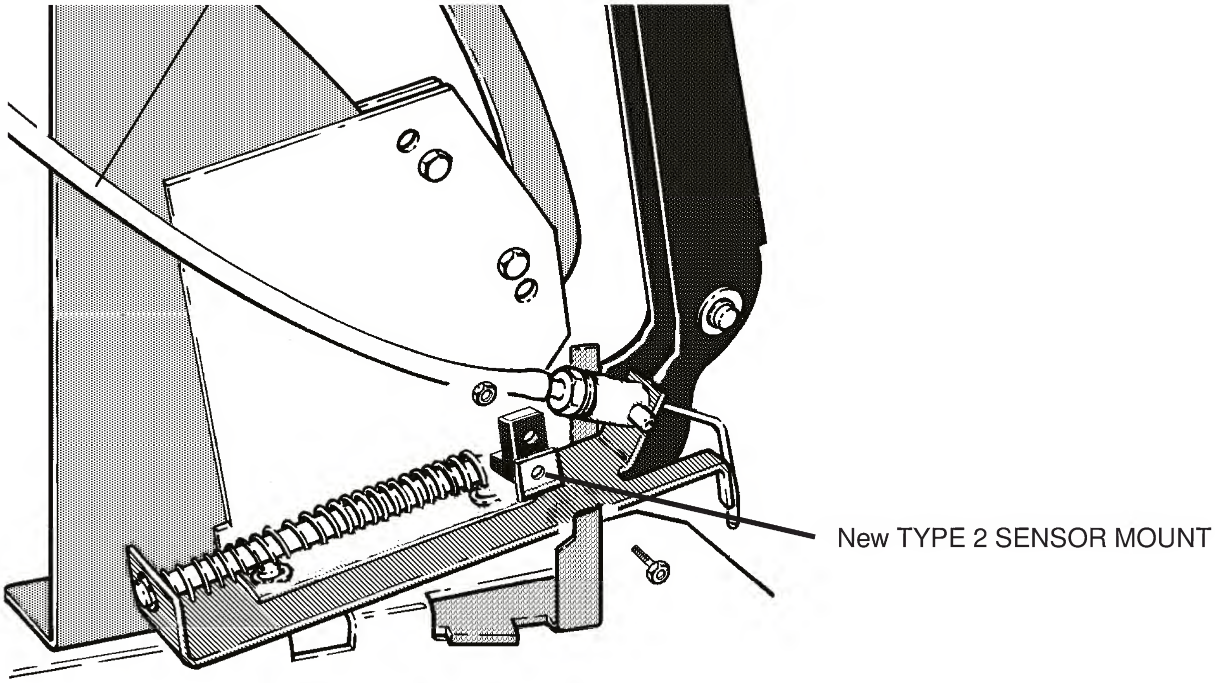


figure 7-5

NEW CASSETTE TRANSPORT ROLLERS

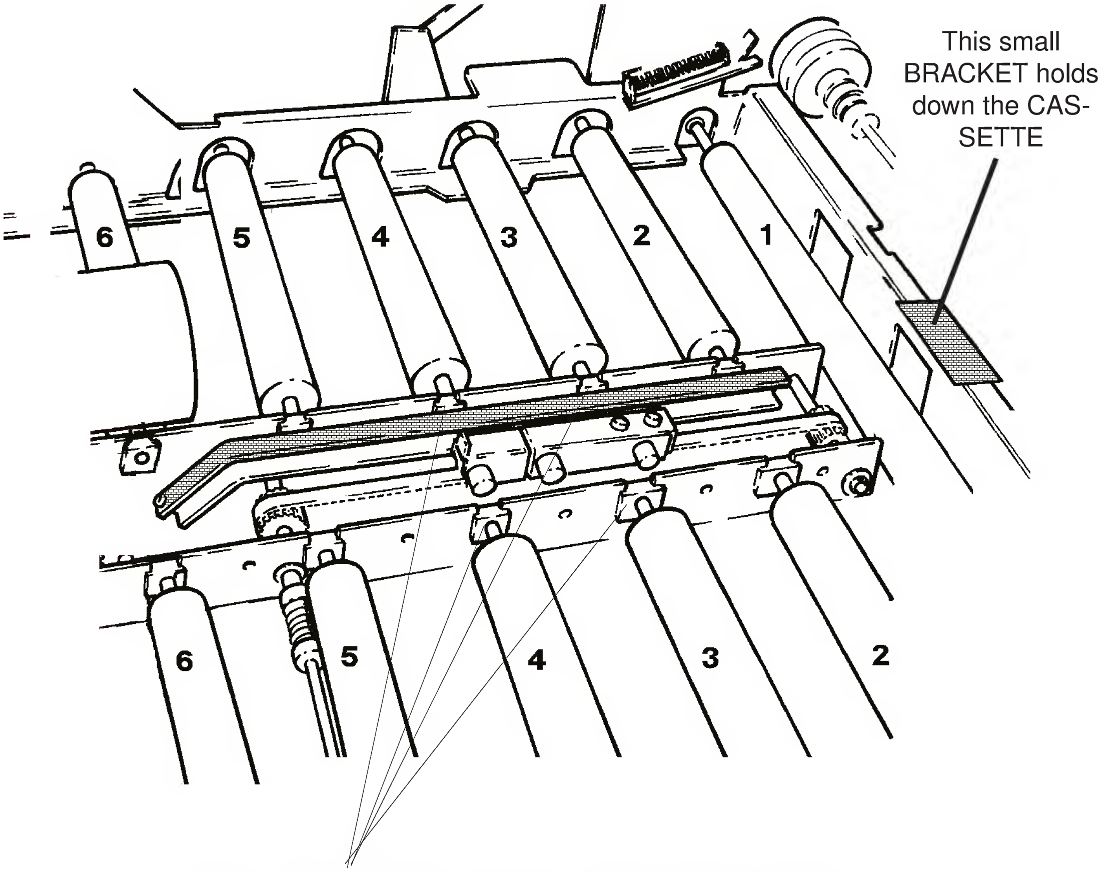
To improve the CASSETTE TRANSPORT and the CASSETTE CENTRING new CASSETTE TRANSPORT ROLLERS are used. In addition 2 sets of the ROLLERS are lowered by 1.5 mm to the centre.

Caution

The ROLLERS must not be cleaned with alcohol. This would dissolve the coated surface. Clean them with water only.

At the CASSETTE END STOP is a small BRACKET which prevents lifting of the CASSETTE when the CASSETTE OPENER ASSEMBLY opens the CASSETTE and moves up.

The shaft of ROLLERS 3 and 4 have a small CENTRING HOLE for identification



These 4 BEARINGS are 1.5 mm deeper than the others.

ROLLERS 1, 2, 5 and 6 are FOAM RUBBER ROLLERS. ROLLERS 3 and 4 are RUBBER ROLLERS

figure 7-6

NEW FILM PICK UP MOTOR M6

The PICK UP MOTOR M6 is replaced by the HOLDING FINGER MOTOR. This is a stronger motor. In addition CAPACITOR C70 is changed from 2.0 µF to 2.5 µF.

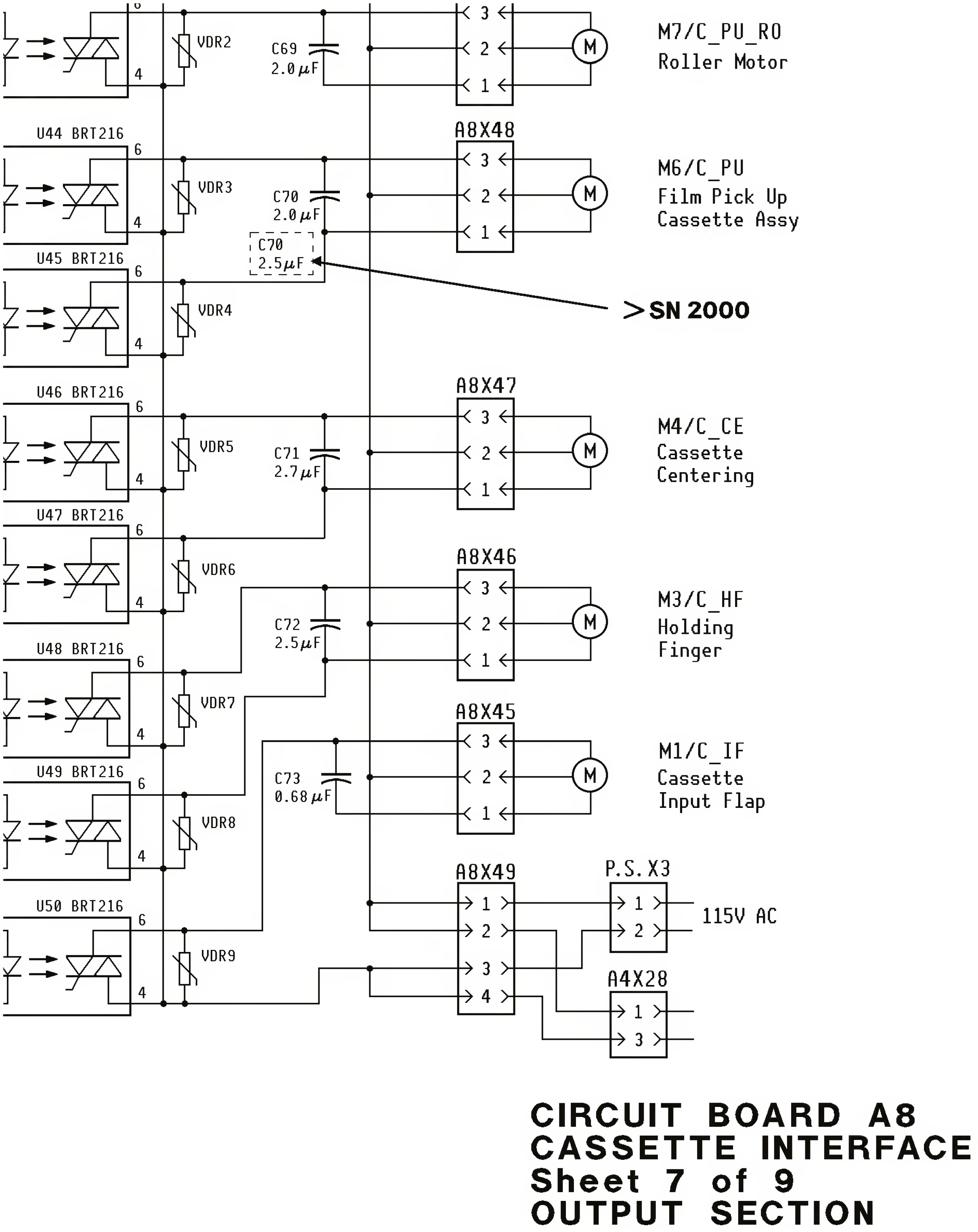

M7/C_PU_RO
Roller Motor
U44 BRT216
U45 BRT216
U46 BRT216
U47 BRT216
U48 BRT216
U49 BRT216
U50 BRT216
VDR2
VDR3
VDR4
VDR5
VDR6
VDR7
VDR8
VDR9
C69 2.0µF
C70 2.0µF
C70 2.5µF
C71 2.7µF
C72 2.5µF
C73 0.68µF
A8X48
M6/C_PU
Film Pick Up
Cassette Assy
>SN 2000
A8X47
M4/C_CE
Cassette
Centering
A8X46
M3/C_HF
Holding
Finger
A8X45
M1/C_IF
Cassette
Input Flap
A8X49
P.S.X3
115V AC
A4X28
M
CIRCUIT BOARD A8
CASSETTE INTERFACE
Sheet 7 of 9
OUTPUT SECTION

figure 7-7

IMPROVED FILM POCKET

The position of the BLOW PIPES is altered by 0.5 mm. To avoid a new adjustment procedure tool TL-4582 became 0.5 mm thicker. Discard your old tool and order a new one. The altered BLOW PIPE POSITION results in a different setting of the PARAMETER ADDITIONAL STEPS. It is now 05h.

Note

- The default value of the PARAMETER ADDITIONAL STEPS is still set to 0Ah in the SERVICE SOFTWARE. It will be corrected when there is a new SERVICE SOFTWARE RELEASE in the future.
- Two STIFFENERS and additional ROLLERS are added to the FILM POCKET.

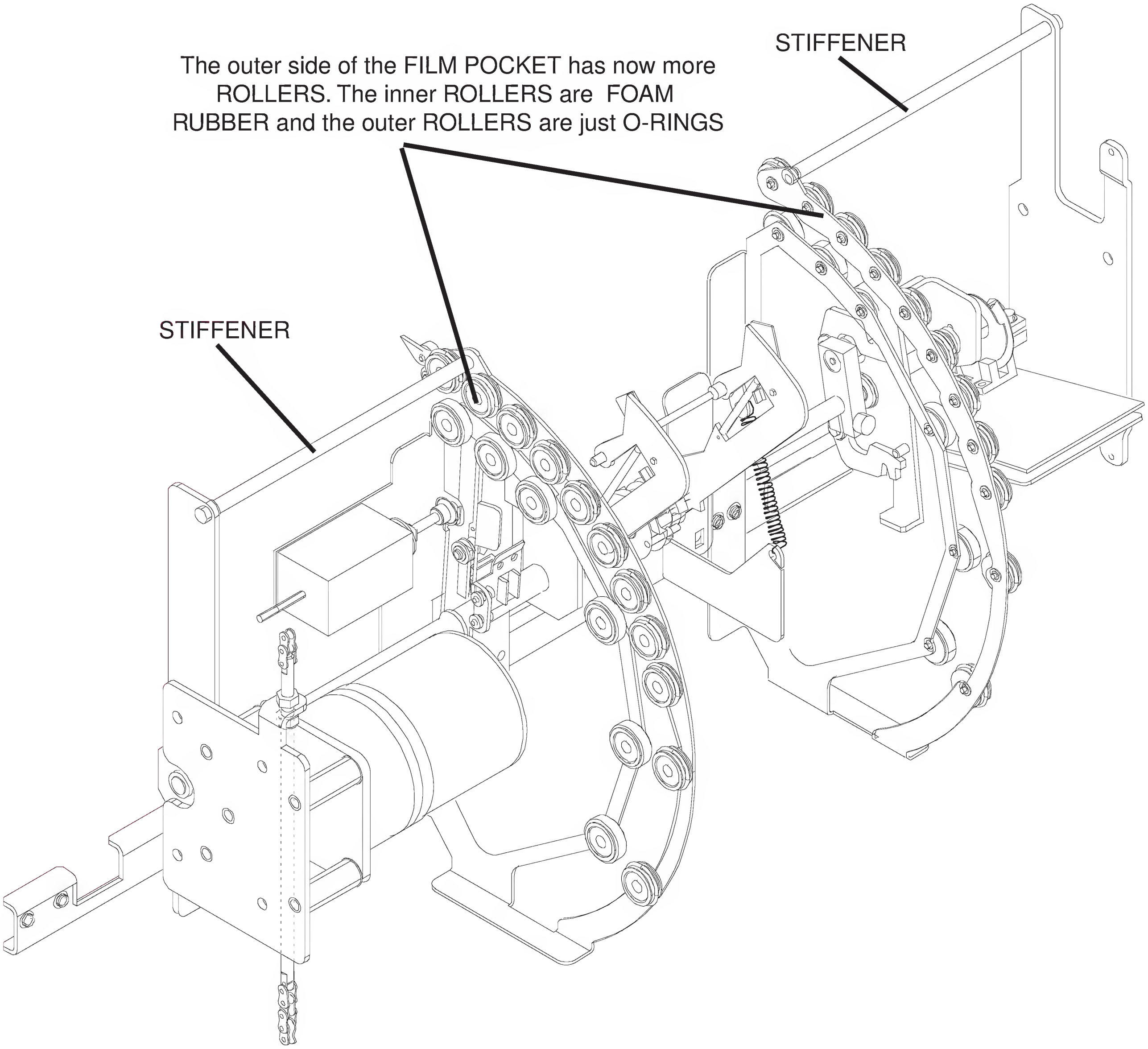
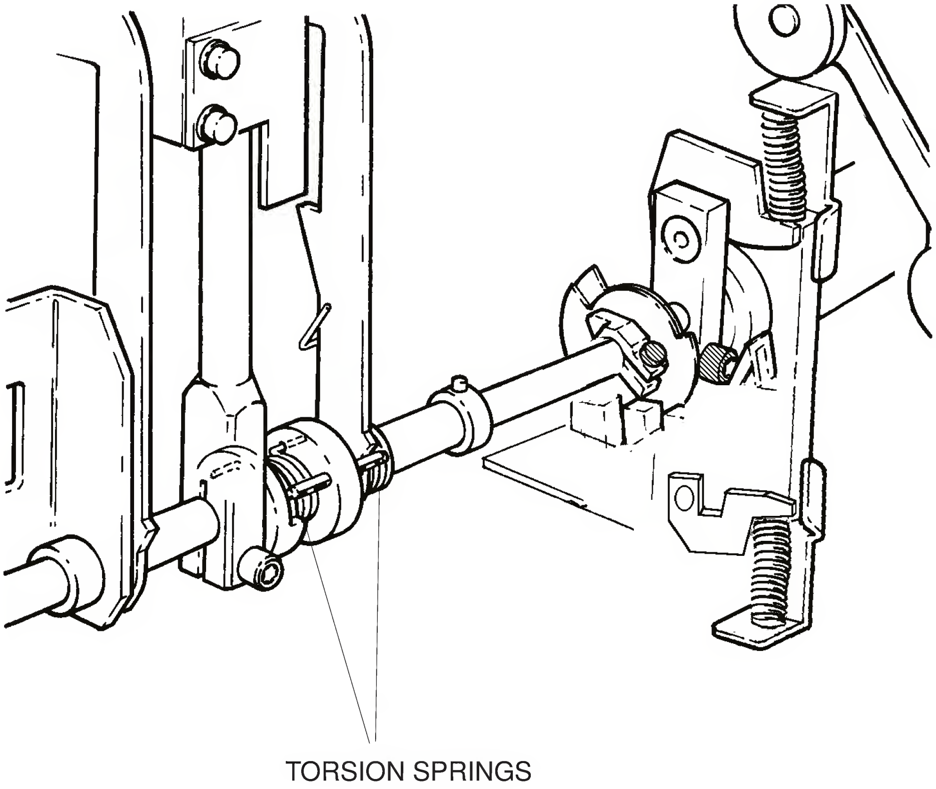

STIFFENER
The outer side of the FILM POCKET has now more ROLLERS. The inner ROLLERS are FOAM RUBBER and the outer ROLLERS are just O-RINGS
STIFFENER

figure 7-8

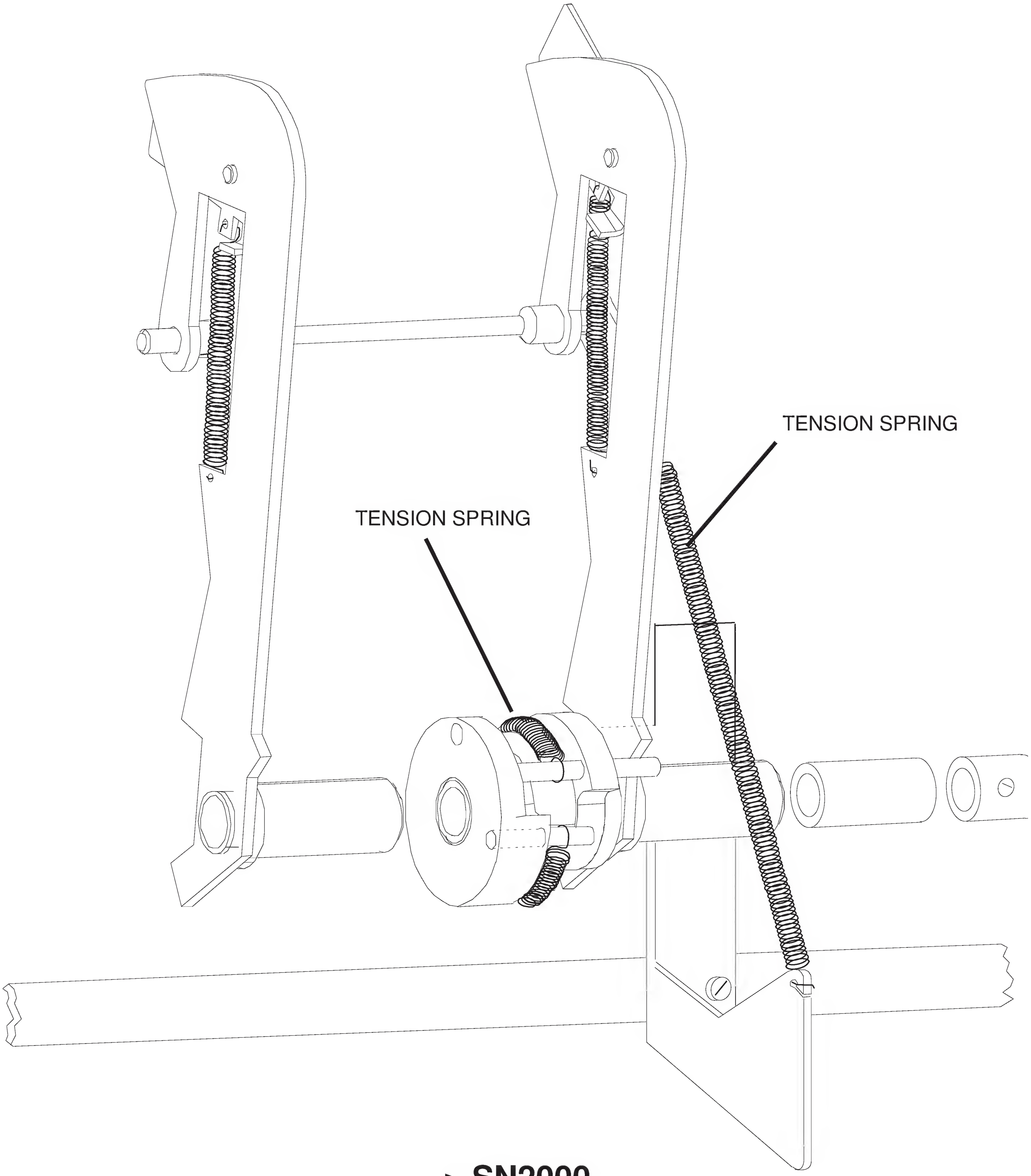
The STIFFENERS make the FILM POCKET more stable and the additional ROLLERS avoid error M-A6. With the previous design it was possible that the fresh FILM from the MAGAZINE hit against the first ROLLER and was stripped off from the FILM POCKET SUCKER BAR when it was transported into the FILM POCKET. The EDGE PROTECTORS installed with modification 30 are no longer necessary. The material of the inner ROLLERS is not changed. It is still coated FOAM RUBBER. At the outer ROLLERS O-RINGS are used instead.

Two TORSION SPRINGS in the FILM POCKET are replaced with TENSION SPRINGS. The new design allows replacement of these SPRINGS to be made in a few minutes without disturbing the FILM POCKET adjustment.



up to SN 2000

figure 7-9


TENSION SPRING
TENSION SPRING

> SN2000

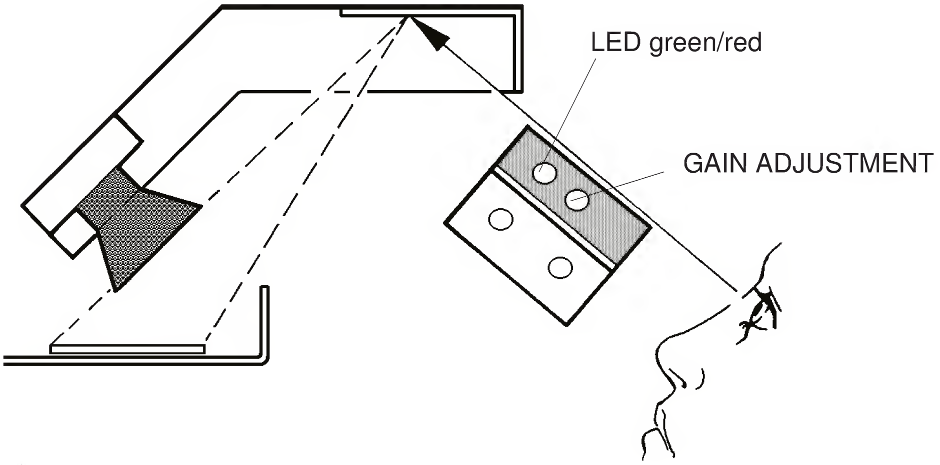
figure 7-10

The MAGAZINE EMPTY SENSOR is turned by 90°. This is done to get more space for the DOUBLE FILM SENSOR CABLING.

Caution

The INDICATOR LED red/green of the SENSOR B60 points now to the FILM and could fog it. Therefore cover it with a piece of black self adhesive tape.

OLD STYLE


LED green/red
GAIN ADJUSTMENT

NEW STYLE

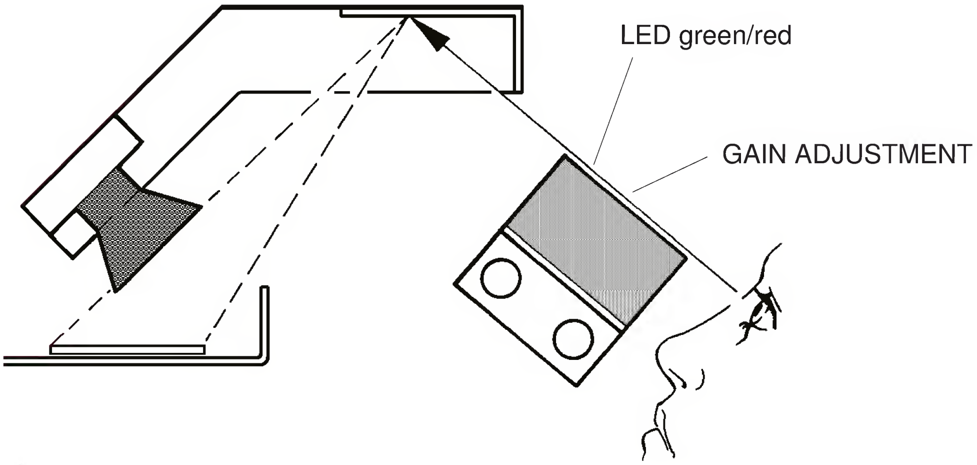

LED green/red
GAIN ADJUSTMENT

figure 7-11

PCB A5 is moved to the right. A RESISTOR NETWORK is added to PCB A5.

The SOLENOID Y14 MAGAZINE SUCKER BAR TILTING is replaced with a new one. The new one does not need an E-RING as an end stop. The E-RING broke occasionally.

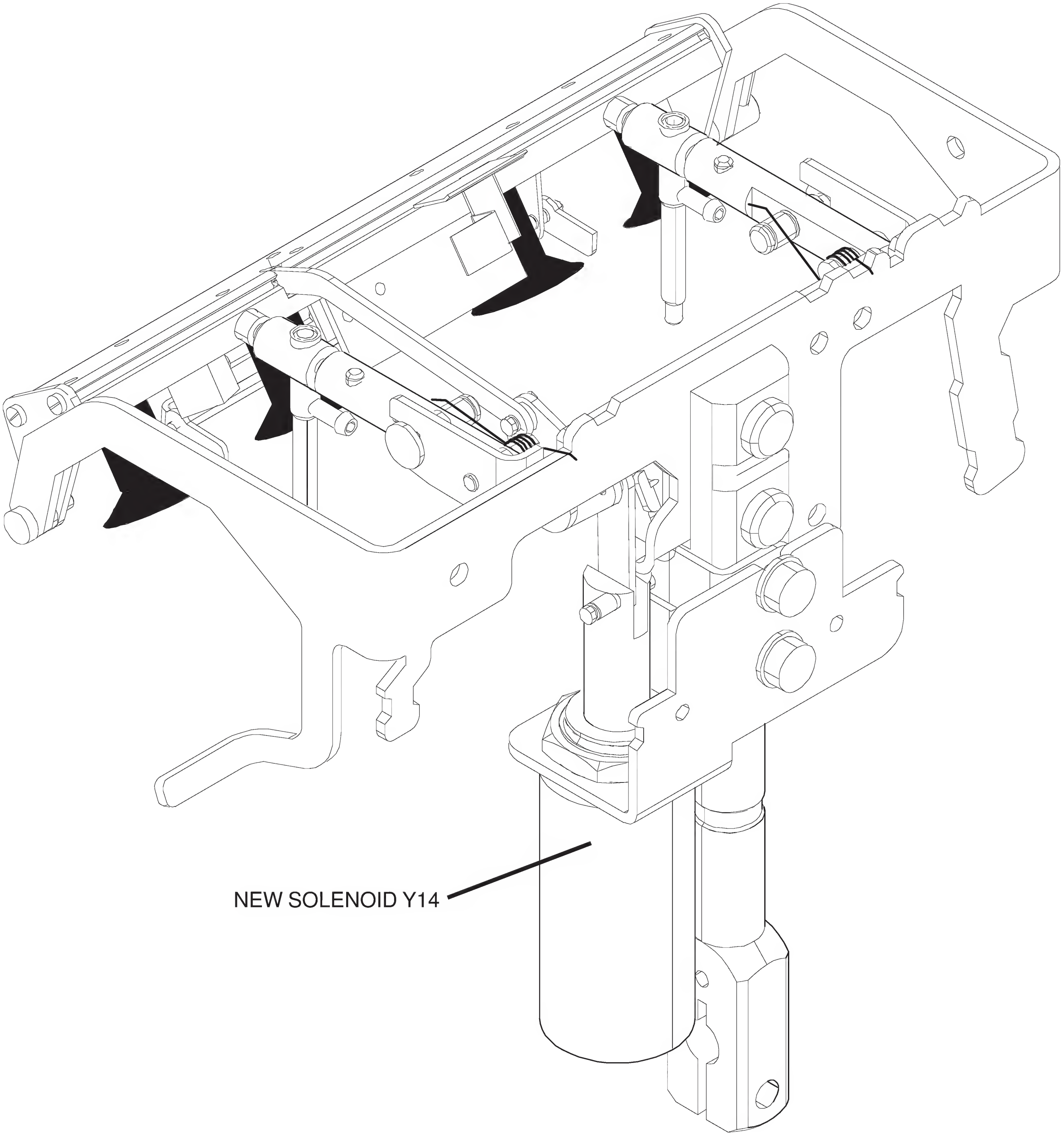


figure 7-12

NEW PROCESSOR INTERFACE

The new PROCESSOR INTERFACE accepts FILMS from the FILM CHUTE and from the DARKROOM FILM FEEDER. The ROLLERS are different and the STEPPER MOTOR is replaced with a stronger one.

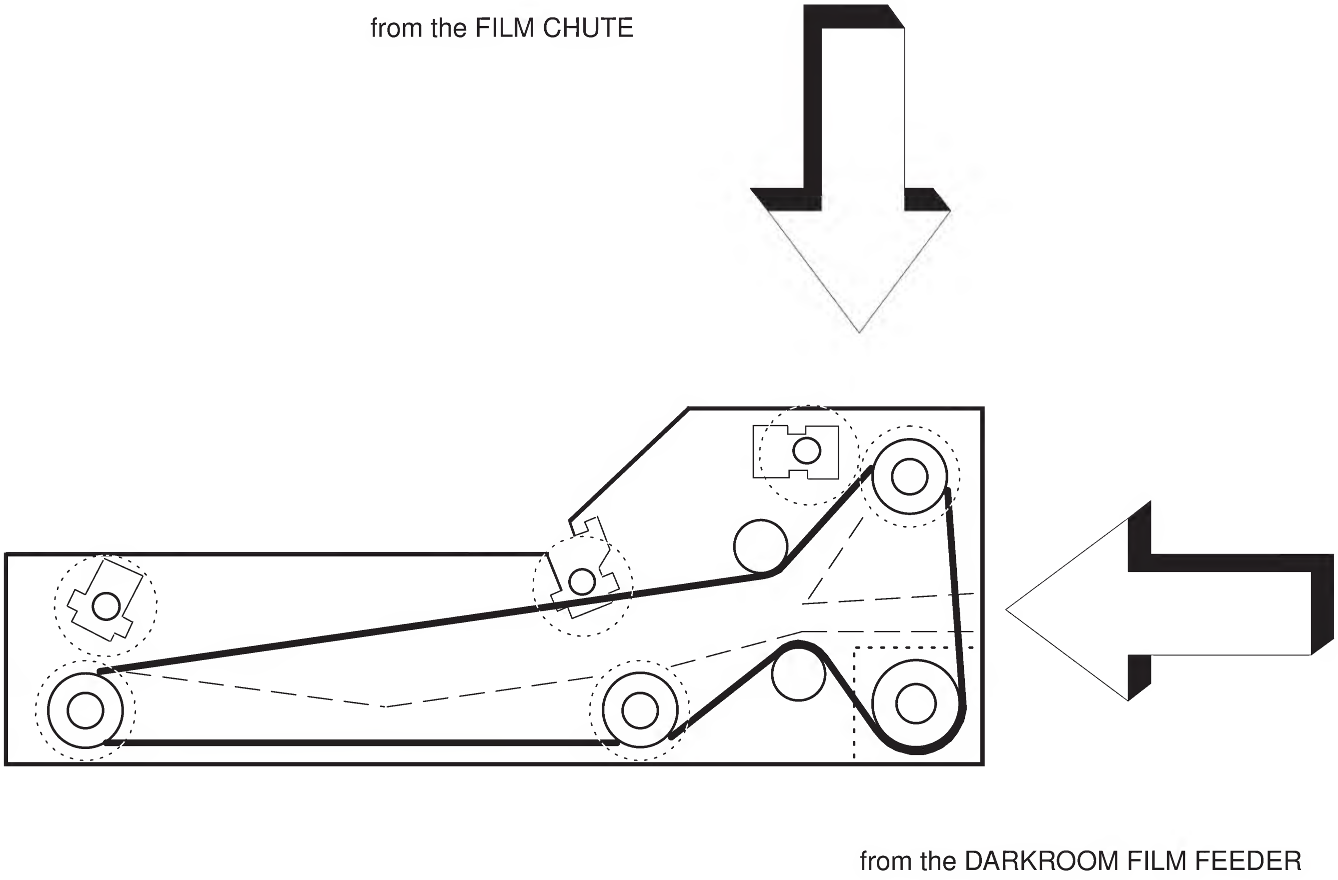

from the FILM CHUTE
from the DARKROOM FILM FEEDER

figure 7-13

MOUNTING BRACKET INTERFACE FLAP MOTOR M11

The MOUNTING BRACKET is altered to make it more stable.

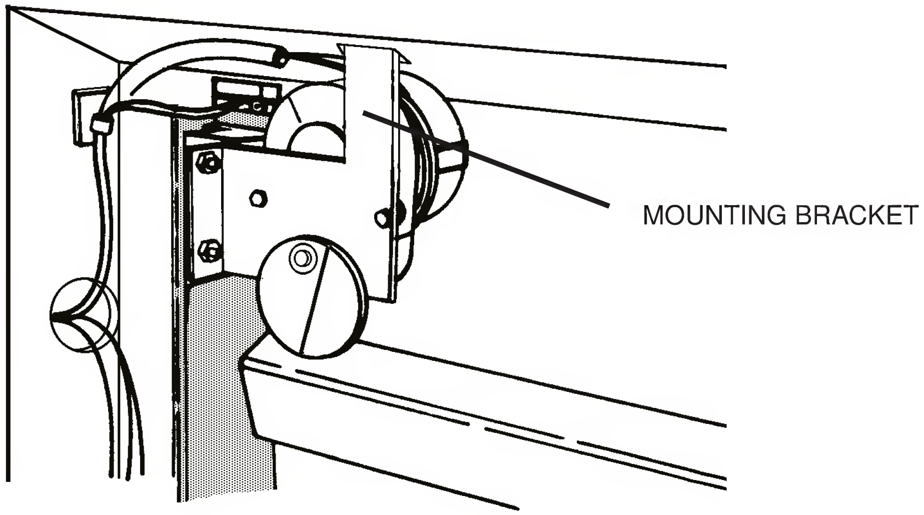


figure 7-14

MAGAZINE HOLDERS

New factory adjusted positioners are installed at the left side of the MAGAZINE CHAMBER. They ensure that there is no excessive side play when the MAGAZINES are seated in the MAGAZINE HOLDERS.

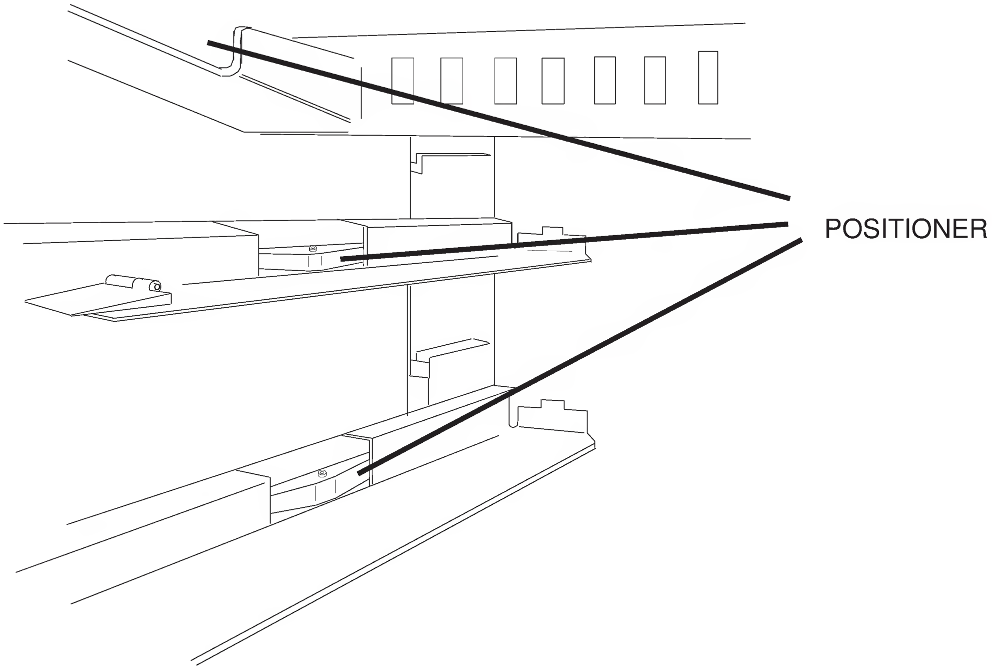


figure 7-15

MAGAZINE DOOR PIVOTS

The screws (Phillips Screws) of the MAGAZINE DOOR PIVOTS are replaced with HEX SCREWS. They can now be tightened with an ALLEN KEY (HEXAGON WRENCH).

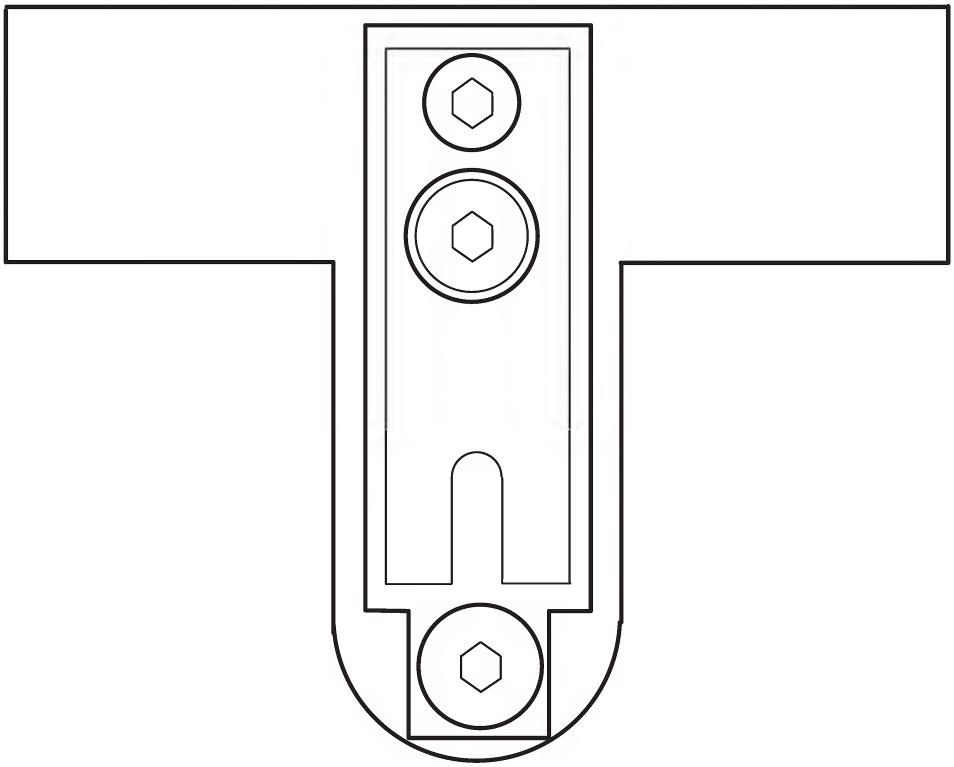


figure 7-16

SOFTWARE VERSION 3.23 and above

DFF FEATURES

The new SOFTWARE VERSION 3.23 and above have the ability to handle the KODAK X-OMAT MULTILOADER 300 DARK ROOM FILM FEEDER (DFF). If versions of software later than 3.22 are installed and or different languages are to be downloaded, it is important to ensure that DIP SWITCH S1 on PCB A4 is set correctly. Please remember to only keep the latest version of software on your LAP TOP.

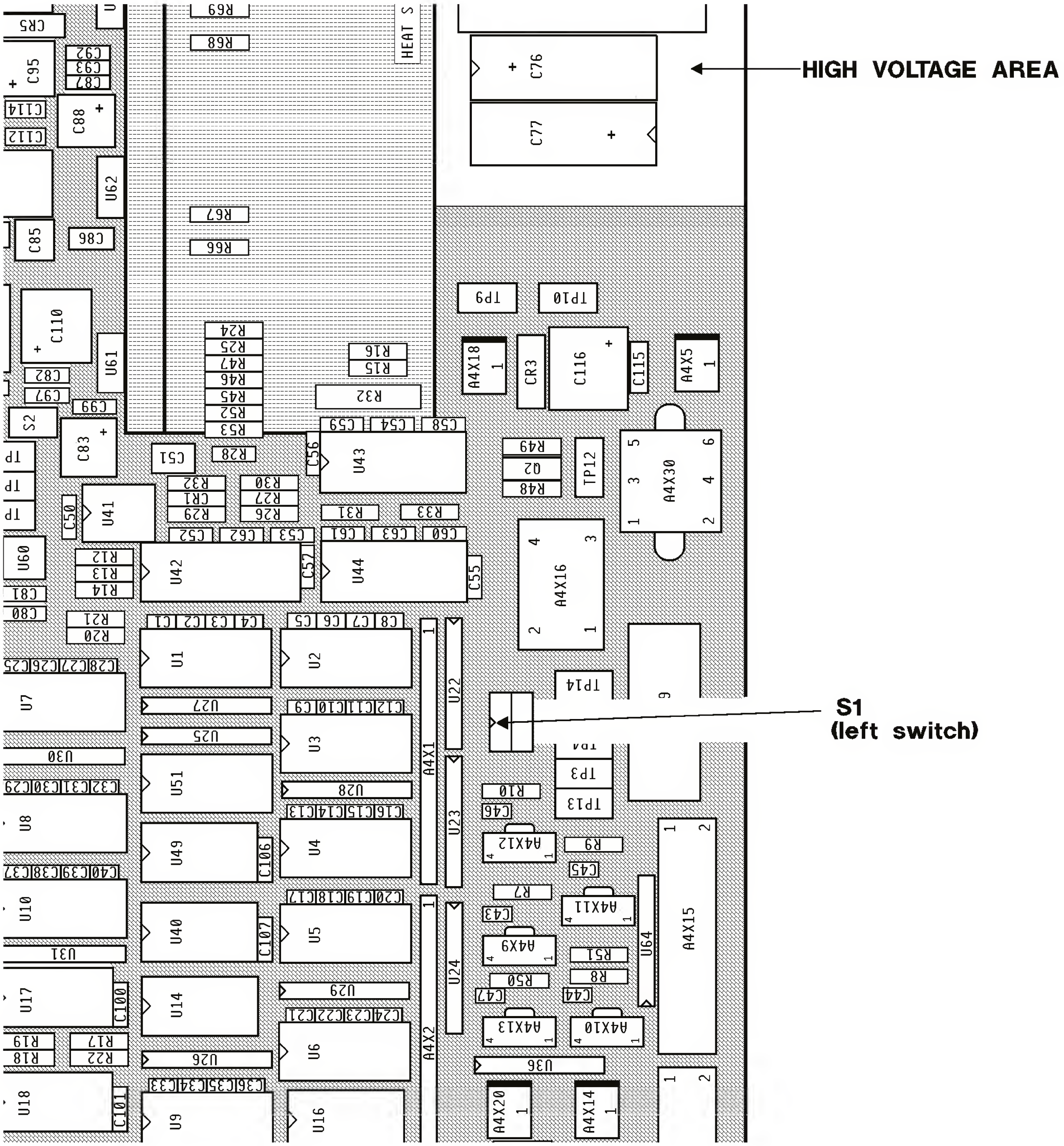

HIGH VOLTAGE AREA
S1
(left switch)
C76
C77
A4X30
A4X16
A4X15
A4X1
A4X2
U43
U44
U42
U41
U1
U2
U3
U4
U5
U6

figure 7-17

Note

In some cases the DIP SWITCH is installed upside down. Therefore look for the imprint "ON" as reference.

1. Normal Condition (no DFF HARDWARE installed)

The left-hand DIP SWITCH S1 must be set to **OFF**, otherwise the error M-D4 will show up.

2. DFF HARDWARE installed

In this case the setting of the DIP SWITCH S1 is not important, because it is by-passed by a GROUND CONNECTION on PCB A12. To avoid confusion set S1 to **ON**.

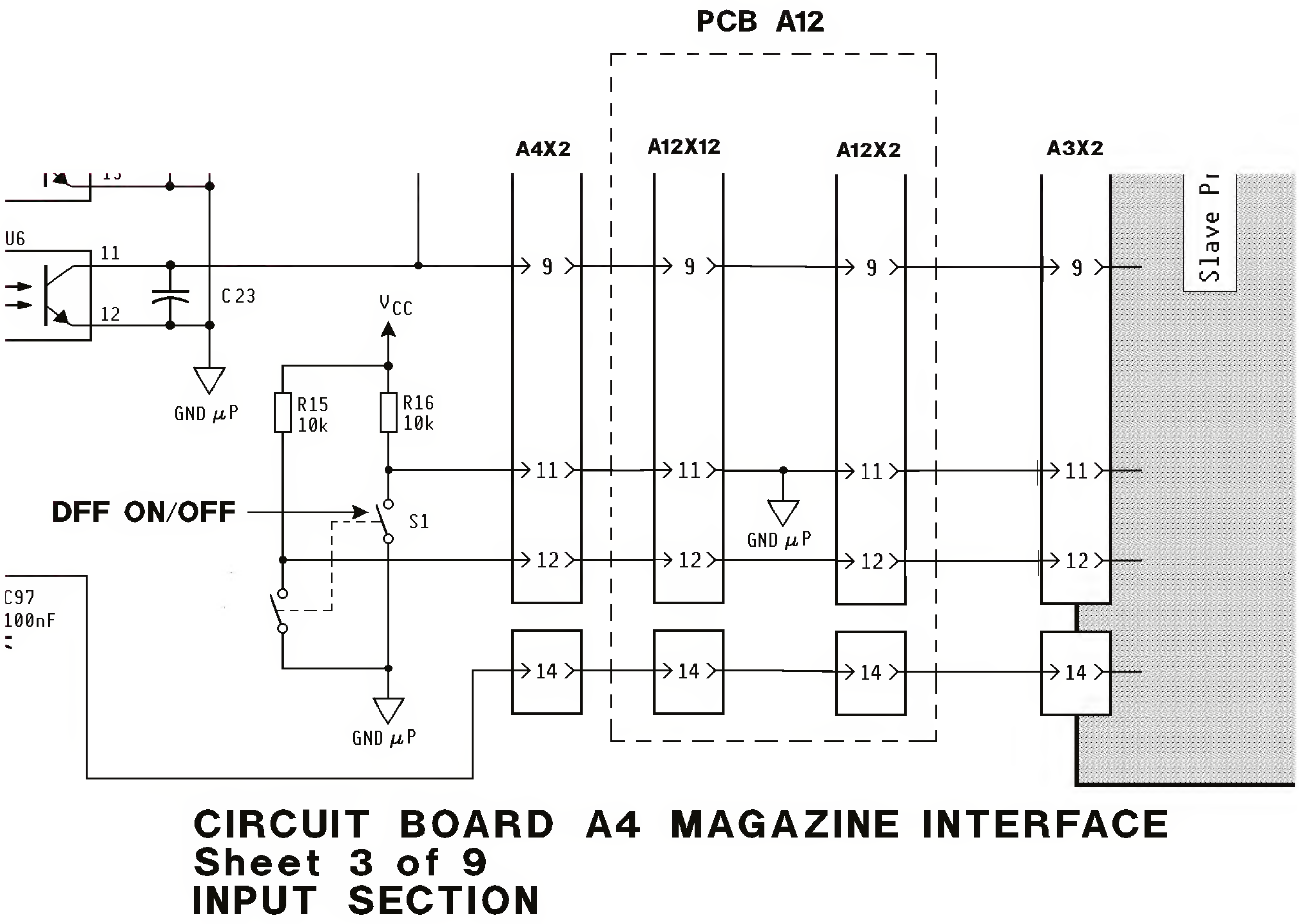

PCB A12
A4X2
A12X12
A12X2
A3X2
U6
11
12
C23
VCC
GND µP
R15 10k
R16 10k
DFF ON/OFF
S1
C97 100nF
9
11
12
14
Slave Pr
CIRCUIT BOARD A4 MAGAZINE INTERFACE
Sheet 3 of 9
INPUT SECTION

figure 7-18

SERVICE CALLS

In the DIAGNOSTICS MANUAL DG 3058 12/92 pages 2-1, 2-2 and 2-3 all error codes declared as SERVICE CALLS are given.
With the new software this listing is no longer valid.

With the new OPERATING SOFTWARE the following error codes are declared as SERVICE CALLS only:

SYSTEM UNIT

FF CES set the XML300 to the inoperative mode. FF does not become cleared automatically on leaving the SERVICE PROGRAM. To reset it select:

OPTION CHANGE ML300 DATA

then

OPTION ENABLE/DISABLE ML300

CASSETTE UNIT

DB Software not compatible (occurs during software download only)

FF CES set the XML300 to the inoperative mode. FF does not become cleared automatically on leaving the SERVICE PROGRAM. To reset it select:

OPTION CHANGE ML300 DATA

then

OPTION ENABLE/DISABLE ML300

MAGAZINE UNIT

96 The FILM POCKET did not reach the SELECTED MAGAZINE LEVEL in the correct time and a time-out occurred. Only valid for SERIAL UNLOAD.

98 The FILM POCKET reached the END SWITCH but not the CASSETTE LEVEL. Only valid for SERIAL UNLOAD.

DB Software not compatible (occurs during software download only)

FF CES set the XML300 to the inoperative mode. FF does not become cleared automatically on leaving the SERVICE PROGRAM. To reset it select:

OPTION CHANGE ML300 DATA

then

OPTION ENABLE/DISABLE ML300

INTERFACE UNIT

FF CES set the XML300 to the inoperative mode. FF does not become cleared automatically on leaving the SERVICE PROGRAM. To reset it select:

OPTION CHANGE ML300 DATA

then

OPTION ENABLE/DISABLE ML300

PROCESSOR UNIT

FF CES set the XML300 to the inoperative mode. FF does not become cleared automatically on leaving the SERVICE PROGRAM. To reset it select:

OPTION CHANGE ML300 DATA

then

OPTION ENABLE/DISABLE ML300

NEW CASSETTE OPENER SEQUENCE

To prevent opening problems with CASSETTES 30x40cm, 35x35cm and 35x43cm the opening sequence for these CASSETTES is changed. An additional stop below the BLOW POSITION is implemented to ease the separation of the LID SCREEN from the TUBE SIDE SCREEN.

PARAMETERS AND SOFTWARE UPDATE

If a software update is made from operating software version 3.23 to a higher version, the PARAMETERS are no longer lost.

8. Changes for XML300 with SN > 3000

This section describes the differences between KODAK X-OMAT MULTILOADER 300 with SN < 3000 and SN > 3000.

OPERATING SOFTWARE version 3.31.

ERROR CODES

To ease the error code recording, the display of the error code is improved.

Old type of error CODE:

0069000000

New Type of ERROR CODE:

S	**C**	**M**	**I**	**P**
00	**69**	**00**	**00**	**00**

The letter above the error code is the abbreviation of the associated unit.

LETTER	UNIT
S	SYSTEM UNIT
C	CASSETTE UNIT
M	MAGAZINE UNIT
I	INTERFACE UNIT
P	PROCESSOR

The error code shown above should be recorded as C69.

FUNCTION CASSETTE OPEN/RETURN

Note

In case of problems set this PARAMETER to 00.

The function to return an empty CASSETTE open can be disabled with a PARAMETER. To disable it SERVICE SOFTWARE 3.30 or higher is required. The name of this PARAMETER is:

CASS OPEN RETURN.

The following settings are possible:

00 = DEFAULT
00 = An empty CASSETTE is closed before it is transported out.
01 = An empty CASSETTE will be returned open.

DOUBLE FILM DETECTION

The DOUBLE FILM DETECTOR is now able to discriminate between :

no FILM
1 FILM
more than 1 FILM

Note

During installation set the PARAMETER DOUBLE SHEET DET as follows. To select it SERVICE SOFTWARE 3.30 or higher is required.

	PARAMETER DOUBLE SHEET DET
ML300 SN > 3000	00
ML300 SN < 3000	01
DEFAULT	00

CASSETTE SIZE DETECTION

The CASSETTE SIZE DETECTION is improved. Error CD7 (a none existing CASSETTE SIZE was detected) should no longer occur.

MESSAGES

The message “TANK FILL ENABLED” will be erased as soon as the tanks are filled.

The messages “REPLENISHMENT MODE IS AUTOMATIC” or “REPLENISHMENT MODE IS FLOODED” will be displayed if the REPLENISHMENT SCREEN is selected.

A new message in Japanese for “CASSETTE NOT LOADED” is implemented.

PARAMETER LOWER POCKET

If a MAMMO CASSETTE is detected, the value of parameter LOWER POCKET is reduced by 11.

HARDWARE CHANGES

PRESSURE ROLLER ASSEMBLY

An additional PRESSURE ROLLER ASSEMBLY is installed. The new PRESSURE ROLLER is driven. It improves the CASSETTE TRANSPORT.

The old PRESSURE ROLLER ASSEMBLY is no longer installed.

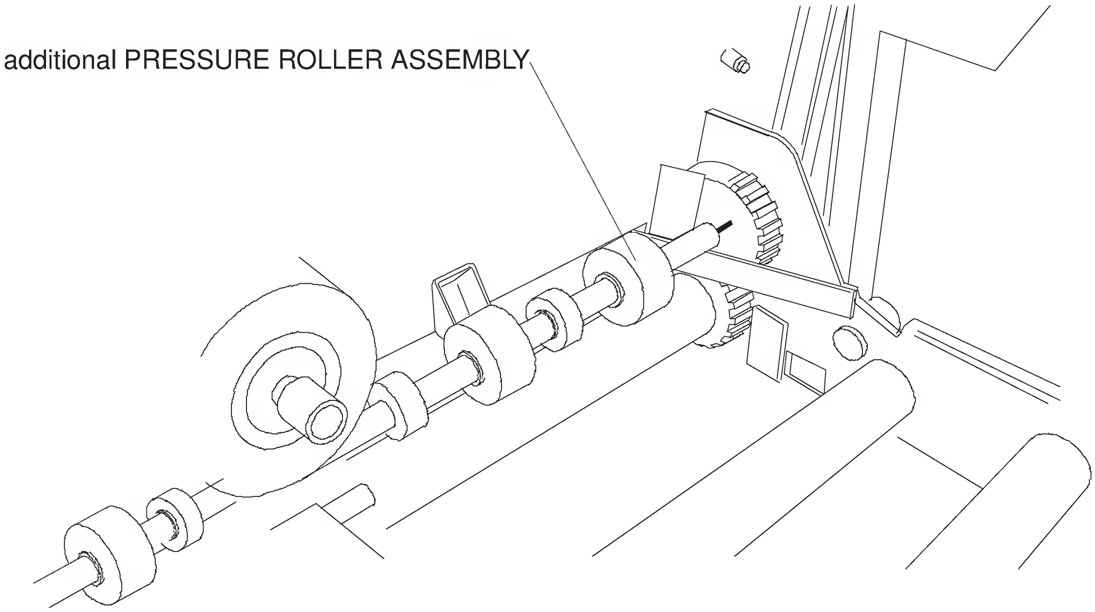

additional PRESSURE ROLLER ASSEMBLY

figure 8-1

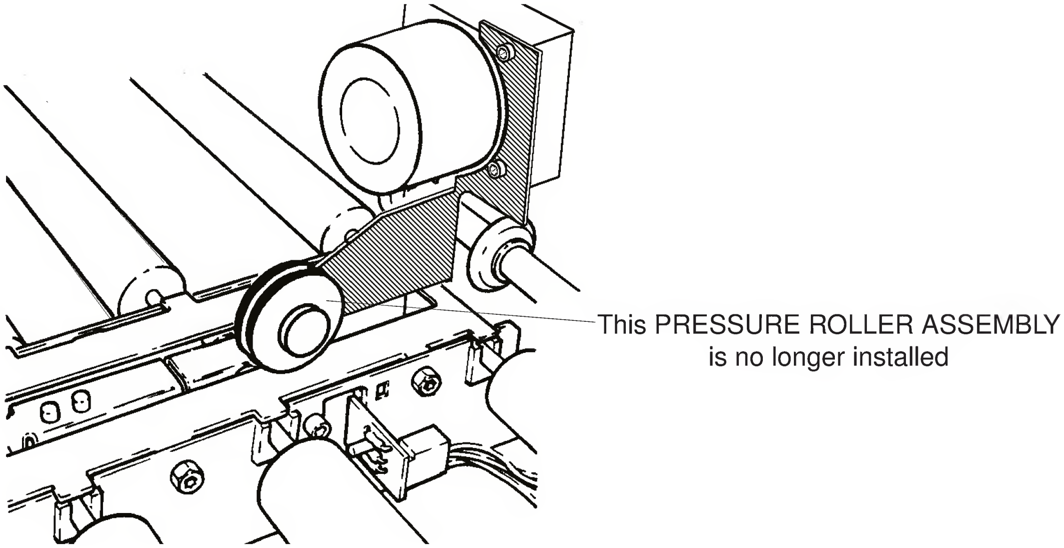

This PRESSURE ROLLER ASSEMBLY
is no longer installed

figure 8-2

TIMING BELTS

The 2 yellow DRIVE BELTS are replaced with TIMING BELTS. This improves the CASSETTE TRANSPORT.

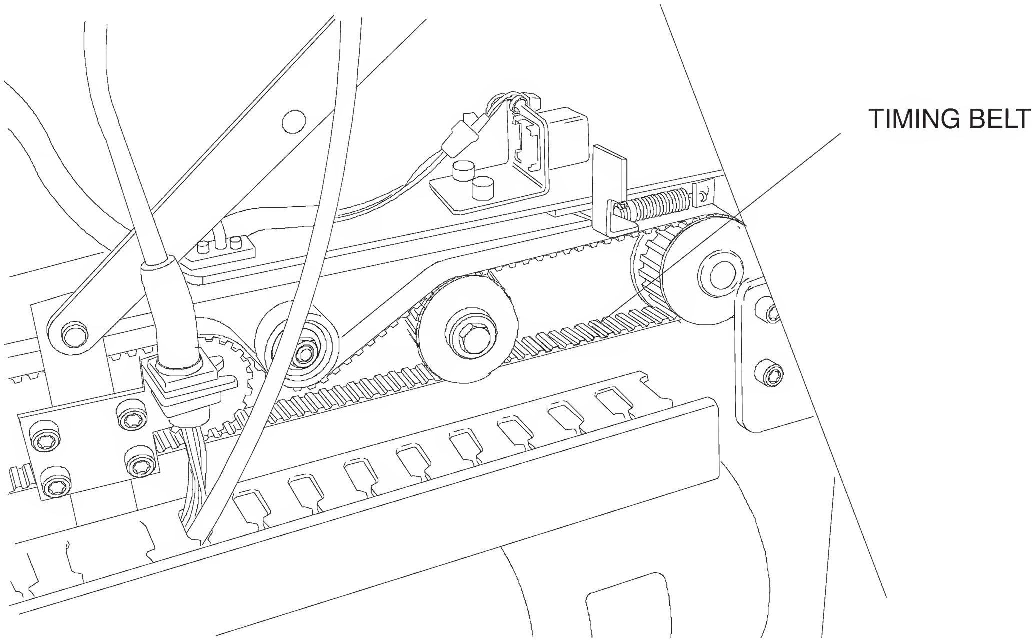


figure 8-3

LEAF SPRING

Each MAGAZINE HOLDER is equipped with a LEAF SPRING on the left-hand side. The LEAF SPRING pushes the MAGAZINE fully to the right. This ensures that the MAGAZINE CODE BRACKETS do not interfere with the PHOTOCELLS on the MAGAZINE SIZE DECODER PCBs.

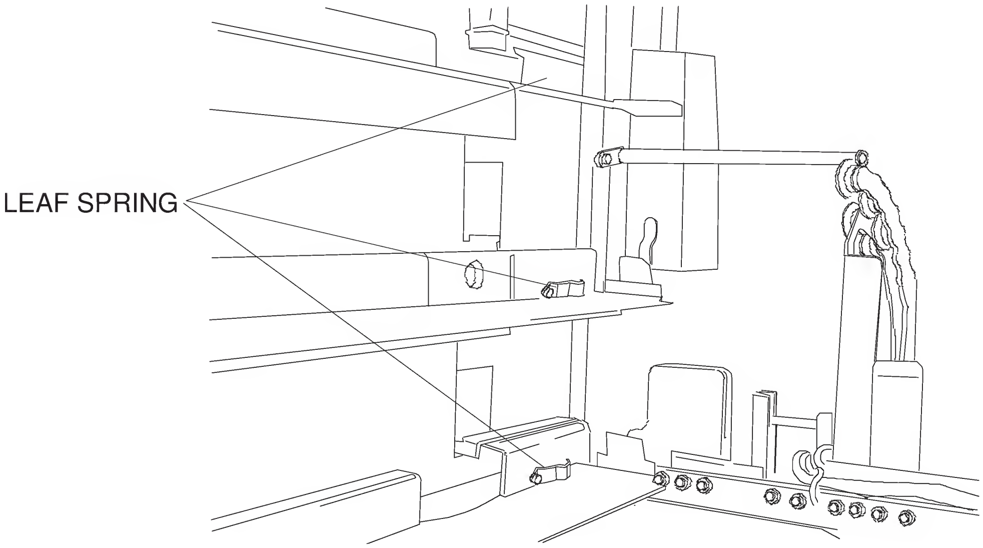


figure 8-4

HUMIDIFIER

An in-built HUMIDIFIER is available as Modification 42 Type 1 SELECTIVE. It can be installed into all ML300s. ML300s with serial numbers > 3000 are already prepared in the factory. This means the HARNESS, TWIN WATER VALVE and T-FITTING are installed to ease the installation of the HUMIDIFIER.

The HUMIDIFIER CARTRIDGE cannot be replaced by the CUSTOMER. To replace it the left-hand SIDE PANEL must be removed.

Caution

To replace the HUMIDIFIER CARTRIDGE take off the left-hand SIDE PANEL. Carefully lift the CARTRIDGE out - it is soaked with water - and remove it in the direction of the FRONT PANEL. Water from the soaked CARTRIDGE must not drop into the ELECTRONICS.

Note

The HUMIDIFIER CARTRIDGE must be replaced at regular intervals
- at least 2 times a year - to minimise biological growth.

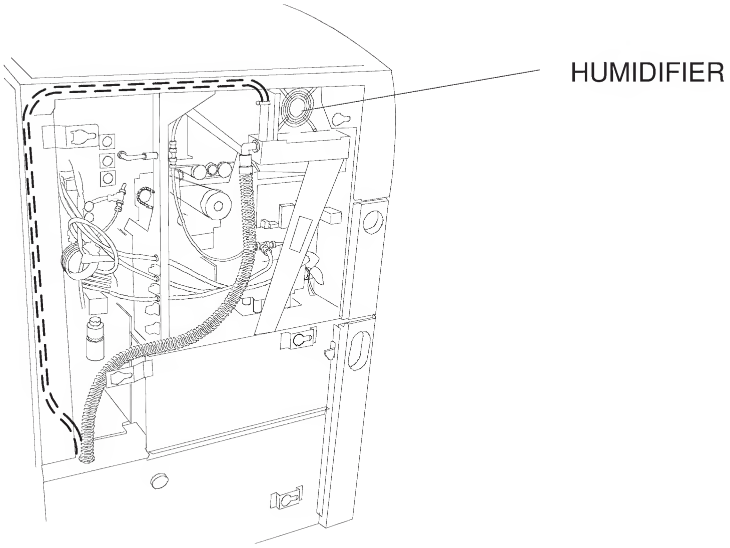


figure 8-5

PROTECTIVE COVER

This COVER protects the FITTINGS at the rear of the ML300, in case a CASSETTE falls behind the ML300. See the figure on the next page. This PROTECTIVE COVER is available as Modification 44 for ML300s with serial numbers < 3000.

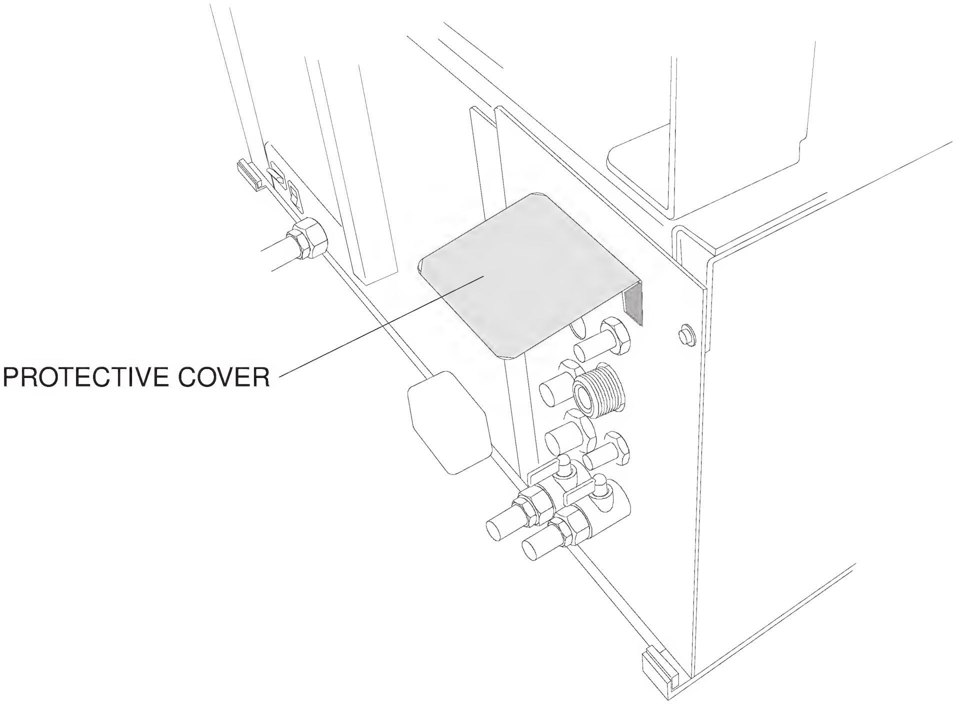

PROTECTIVE COVER

figure 8-6

FILM CHUTE

The old FILM CHUTE is held in place with 4 SCREWS. On ML300s with SN > 3000 the FILM CHUTE is held in place with just 1 LOCK SCREW.

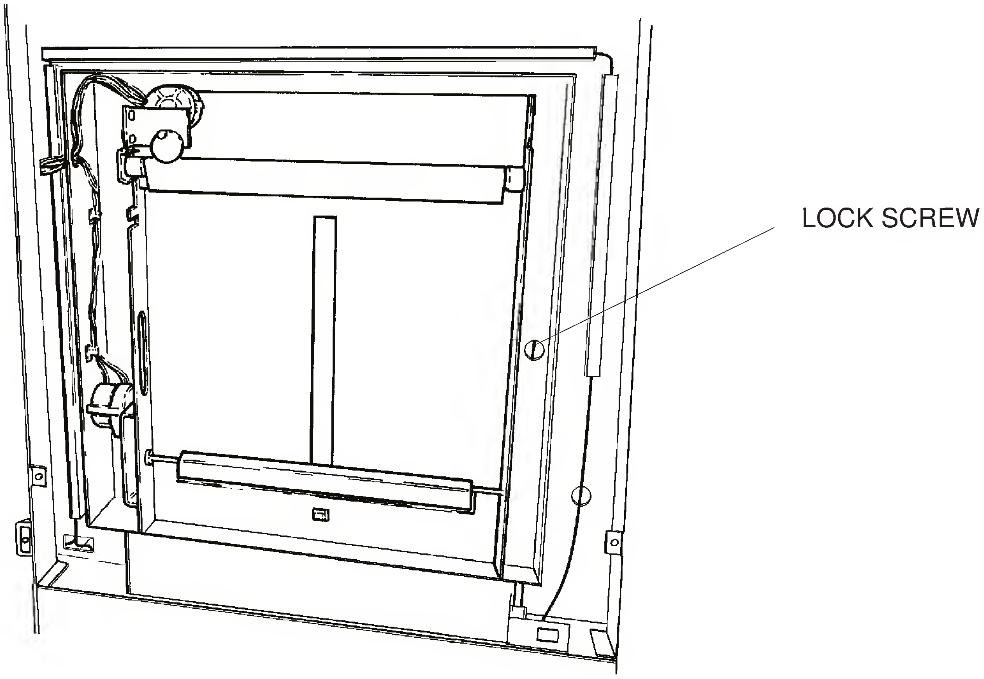


figure 8-7

PANELS

It is now possible to remove the PANELS more easily and quicker.

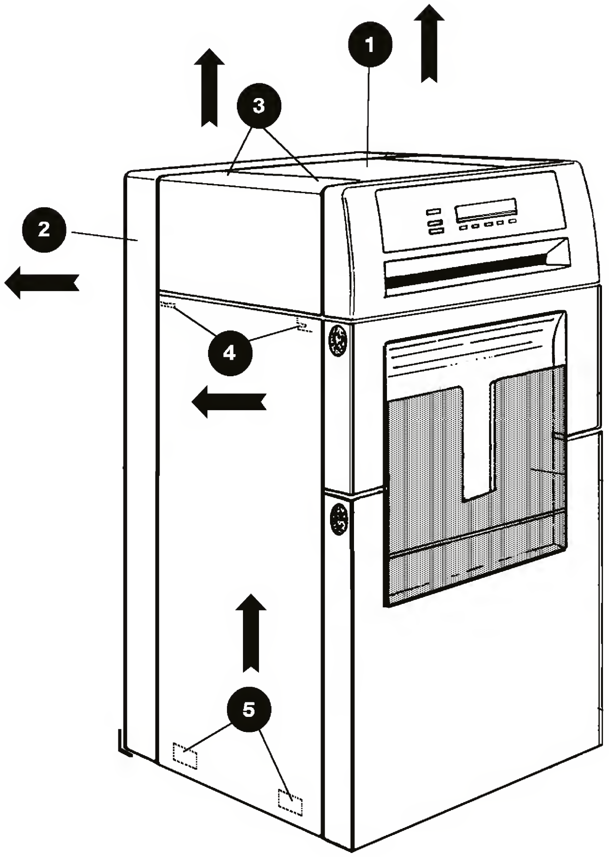


figure 8-8

To take off a SIDE PANEL use the following procedure:

1. Take off the TOP COVER.
2. Take off the REAR PANEL. There are just 2 SCREWS. The bottom of the REAR PANEL rests on 2 HOLDING BRACKETS.
3. Take out the SIDE PANEL MOUNTING SCREWS.
4. Shift the SIDE PANEL to the rear to disengage it from their LOCATORS.
5. Lift the PANEL out of the 2 bottom MOUNTING BRACKETS.

9. Changes for XML300 Plus

The integrated PROCESSOR 270RA is replaced with the integrated PROCESSOR 3000 RA. The ENTRANCE ROLLERS of the integrated 3000 RA do not detect the LEADING EDGE of the FILM transported from the ML300 Plus to the PROCESSOR. The FILM DETECTOR SENSORS are now part of the ML300 Plus PROCESSOR INTERFACE.

FILM DETECTOR B25(right) is connected to A8X32 and FILM DETECTOR B26(left) is connected to A8X24.

To handle these 2 additional SENSORS a OPERATING SOFTWARE version 5.14 or higher is required.

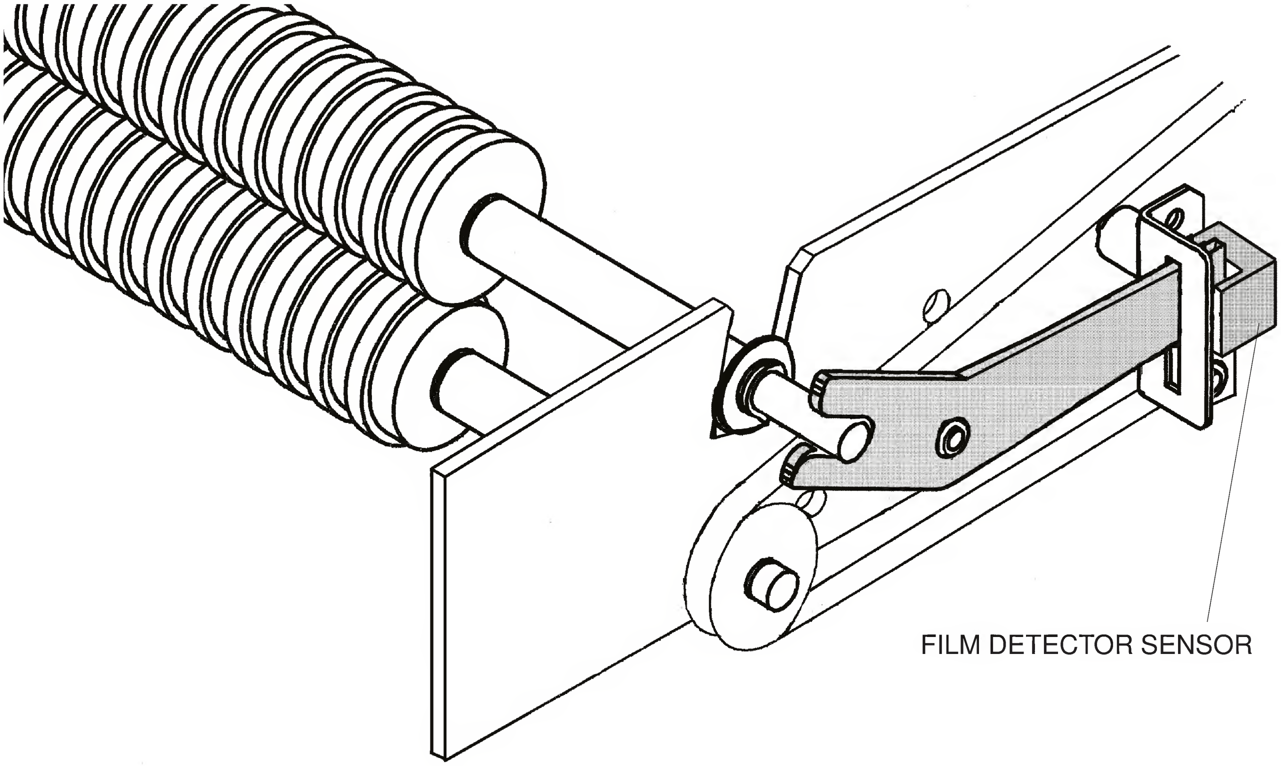


figure 9-1

10. PREVENTIVE MAINTENANCE

Note

This procedure is only for the MULTILOADER part. For PROCESSOR Preventive Maintenance see
PROCESSOR Service Manual.

Preparation:

Ask the operator for any problems.

Remove all MAGAZINES to avoid fogging of customer films.

Remove all PANELS.

Override INTERLOCK SWITCHES.

Connect the Lap Top and start the Service Program.

General Activities:

1. Analyse the last 100 malfunctions .Check all error codes that occurred very often and ask the operator for details
(i.e., C-74, C-88, C92, C-94 etc.)

Start the SERVICE PROGRAM

Select TROUBLE SHOOTING from the GLOBAL MENU .... press ENTER

Select Malfunctions of XML300 .... press ENTER

Use for each code the description in the Service Software or Diagnostic Manual and step through the described actions for the possible causes.

Check the less frequent error codes too, that may have been created because of lost films.

NOTE

Working through the error code list is the most essential activity of the MULTILOADER preventive maintenance. Always follow the activities mentioned in the Diagnostics Manual or Service Software, even if it seems to be an operator caused malfunction.

2. Exit the SERVICE PROGRAM

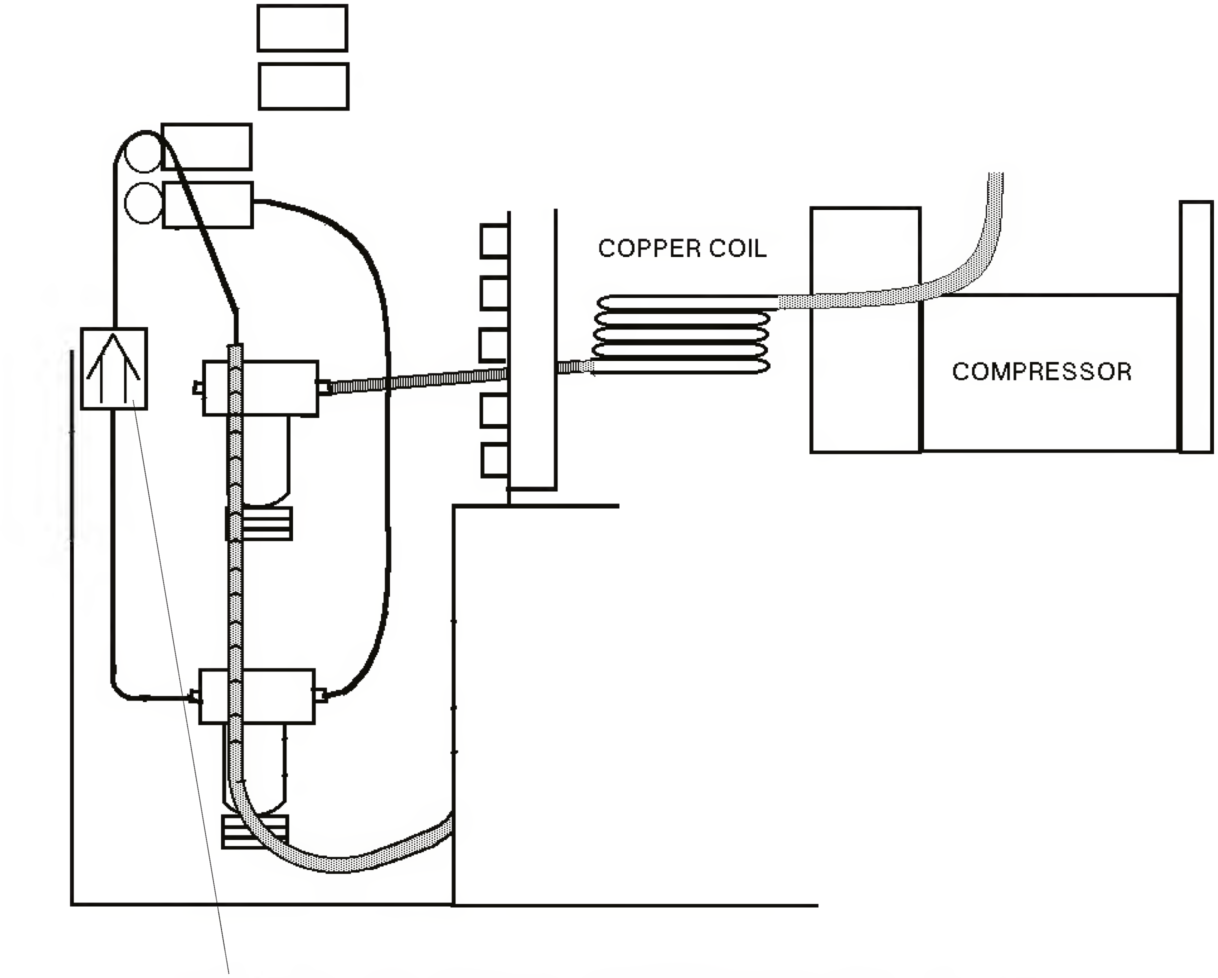
Press Escape until the Main Menu Trouble Shooting is reached

Select Quit Trouble Shooting .... press ENTER

Select Quit the program .... press ENTER

3. Check MAGAZINE DOOR hinges (may be loose).

4. Exchange the AIR FILTER 9186886 on the pneumatic unit.



The arrow on the AIR FILTER 9186886 must point upwards

figure 10-1

5. Drain and clean both water traps and check movability of drain piston.

6. Check function of both FANS (Power Supply and Processor Interface). If the INTERFACE FAN failed, clean the INTERFACE area.

CASSETTE AREA:

Warning

BE CAREFUL WHEN WORKING IN THE CASSETTE OPENER AREA. THE OPENER MOTOR AND THE OPENER MECHANISM ARE VERY STRONG. THEY CANNOT BE MOVED MANUALLY. THEY MAY SQUEEZE YOUR HAND AND TRAP YOU IF YOU TRY TO STOP THEM MANUALLY. NEVER START THE CASSETTE OPENER MOTOR WHEN SOMEONE'S HANDS ARE IN THE CASSETTE AREA.

1. Check the BLOW PIPE position and their function.

2. Remove any dust and dirt from BASE PLATE under CASSETTE TRANSPORT ROLLERS.

3. Check OPENER mechanism. The OPENER must be in the uppermost position. Move the OPENER up and down. Check if at the end of the movement a high pitch noise occurs. If so, the adjustment of the CASSETTE OPENER STOP PLATE is not correct. Do the necessary adjustment.

   Start the SERVICE PROGRAM

   Select Service Mode ML300 from the GLOBAL MENU .... press ENTER

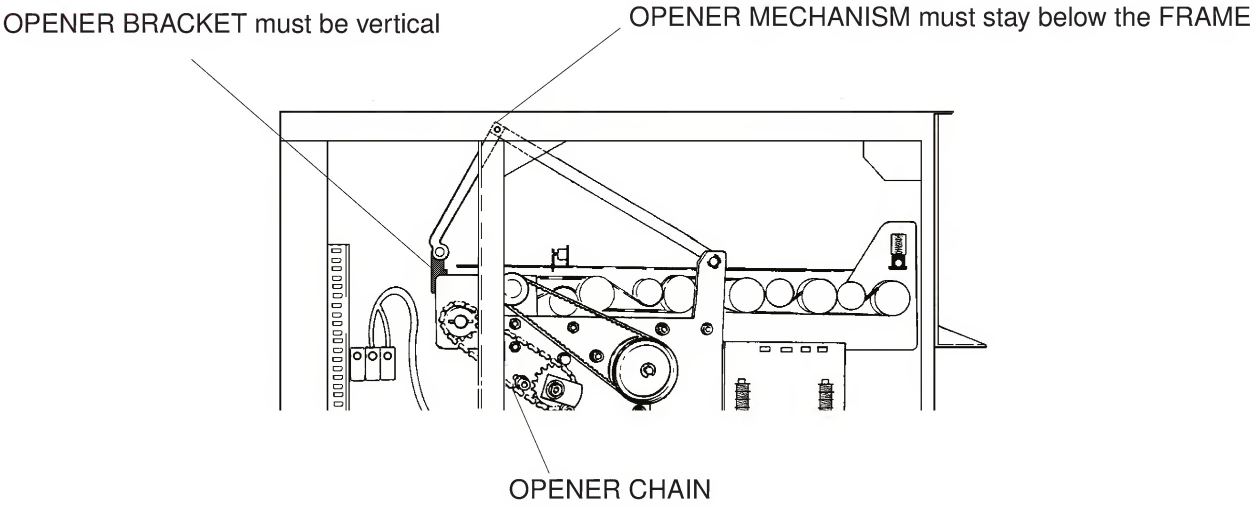

OPENER BRACKET must be vertical
OPENER MECHANISM must stay below the FRAME
OPENER CHAIN

figure 10-2

ENTER SERVICE MODE MESSAGE is displayed... press ENTER
UNIT DATA are displayed .... press ENTER
Select COMPONENT TEST from the MAIN MENU .... press ENTER
Select CASSETTE MOTORS .... press ENTER
Select CASSETTE OPENING M5 .... press ENTER

Select DOWN
Select UP

4. Exit the SERVICE PROGRAM
   Press 3 times BACKSPACE
   Select LEAVE COMPONENT TEST .... press ENTER
   Select QUIT ML300 SERVICE MODE .... press ENTER
   Select Quit the program .... press ENTER

5. Lubricate CASSETTE PRESSURE BOLTS with grease TL-2247.

6. Check tapes on UPPER FILM GUIDES (only up to S/N 1437).

7. Check that the OPENER CHAIN is tensioned.

Note

If you had to tension the OPENER CHAIN do the CASSETTE OPENER ADJUSTMENT.

AIR FILTER

1. Check the AIR FILTER at the air intake of the POWER SUPPLY.

2. Clean or replace the FILTER(PN 9187856)

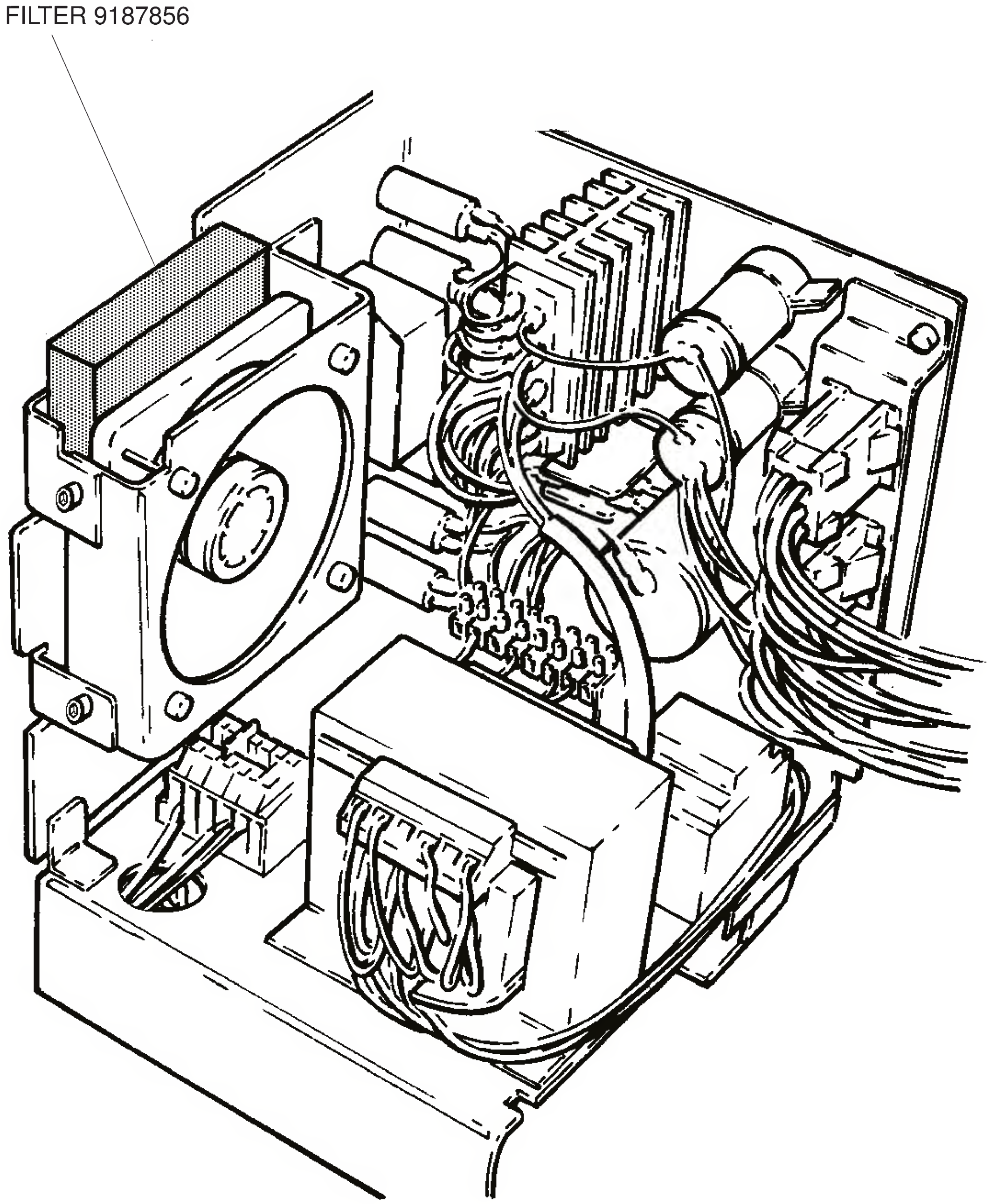


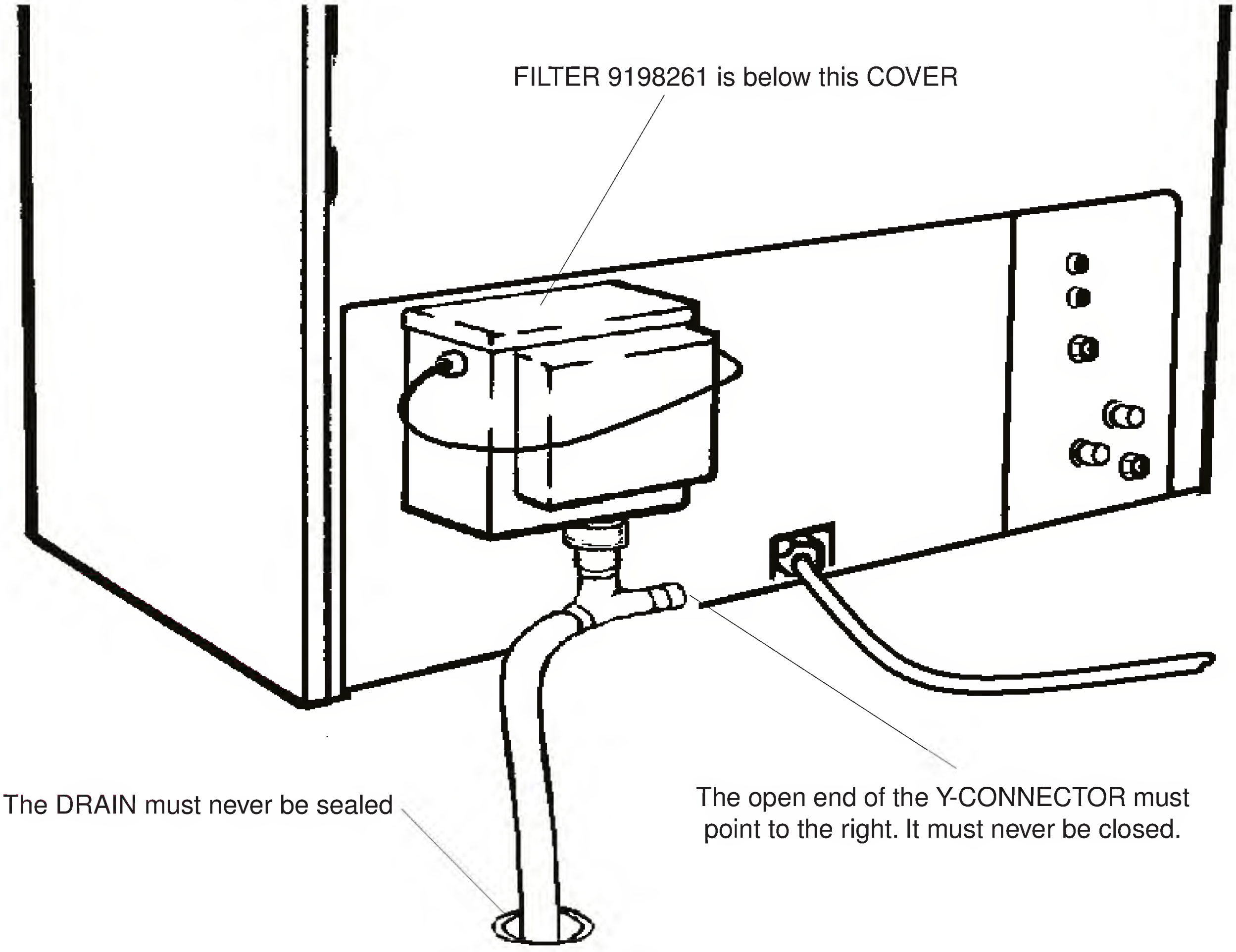
figure 10-3

HUMIDIFIER (MOD 14)

1. To reduce the potential for biological growth and contamination within the ML300 HUMIDIFIER, the water reservoir should be drained and the cleaned with a disinfectant. The FILTER 9198261 should be replaced at least every 6 month. The biological growth and contamination are not originated by the HUMIDIFIER. They are caused by the outside air and the water. They are then accumulated in the FILTER. The disinfectant has to be bought locally.

Warning

Follow the how-to-use and the safety instructions supplied with the disinfectant.


FILTER 9198261 is below this COVER
The DRAIN must never be sealed
The open end of the Y-CONNECTOR must point to the right. It must never be closed.

EXTERNAL VERSION (MOD 14)

figure 10-4

2. To avoid flooding of the ML300 the DRAIN HOSE must be connected to an open DRAIN The safety opening of the Y-CONNECTOR must not be clogged.

HUMIDIFIER (MOD 42)

Warning

- Follow the how-to-use and the safety instructions supplied with the disinfectant.
- The HUMIDIFIER CARTRIDGE must not be replaced by the CUSTOMER. To replace it the left-hand SIDE PANEL must be removed

1. To reduce the potential for biological growth and contamination within the ML300 HUMIDIFIER, the water reservoir should be drained and the cleaned with a disinfectant. The FILTER 9198261 should be replaced at least every 6 month. The biological growth and contamination are not originated by the HUMIDIFIER. They are caused by the outside air and the water. They are then accumulated in the FILTER. The disinfectant has to be bought locally.

2. To replace the HUMIDIFIER CARTRIDGE take off the left-hand SIDE PANEL. Carefully lift the CARTRIDGE out - it is soaked with water - and remove it in the direction of the FRONT PANEL. Water from the soaked CARTRIDGE must not drop into the ELECTRONICS.

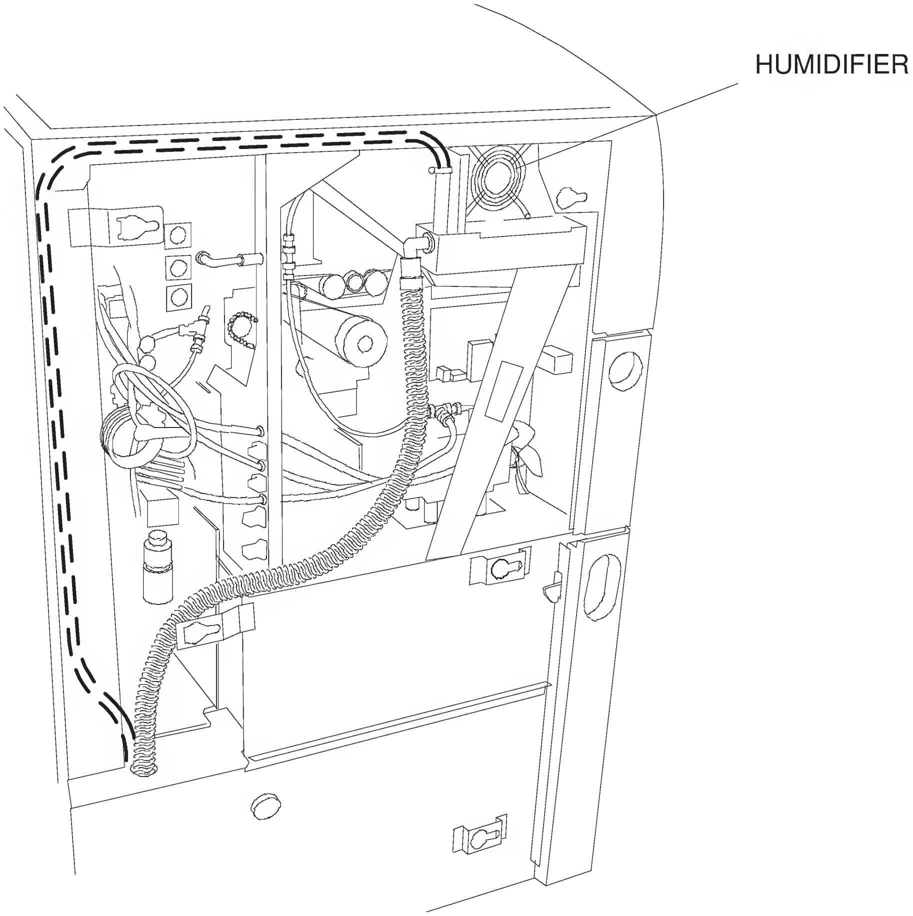


figure 10-5

VENTING

1. Check that the ML300 is vented correctly. Use the following procedures to check the negative air flow of the site.

Note

This procedure is designed to check the negative exhaust flow of the building not the processor.

2. Verify that the processor is switched off.

3. Use AIR METER TL-2431 to measure negative static pressure in the EXHAUST DUCT 30.5 cm (12 in.) from the end that is connected to the processor.

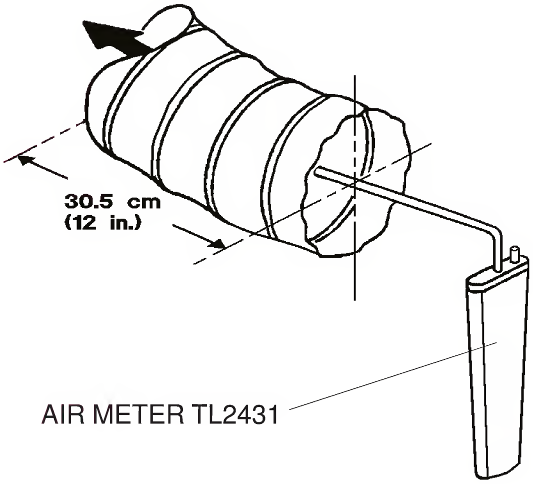


figure 10-6

4. Adjust the gap between the BUILDING EXHAUST DUCT and the DUCT from the PROCESSOR to obtain the required static pressure.

NEGATIVE STATIC PRESSURE, WATER HEAD		
DUCT DIAMETER	**MIN**	**MAX**
76 mm (3 in.)	0.76 mm (0.03 in.)	1.02 mm (0.04 in.)
102 mm (4 in.)	0.25 mm (0.01 in.)	0.51 mm (0.02 in)

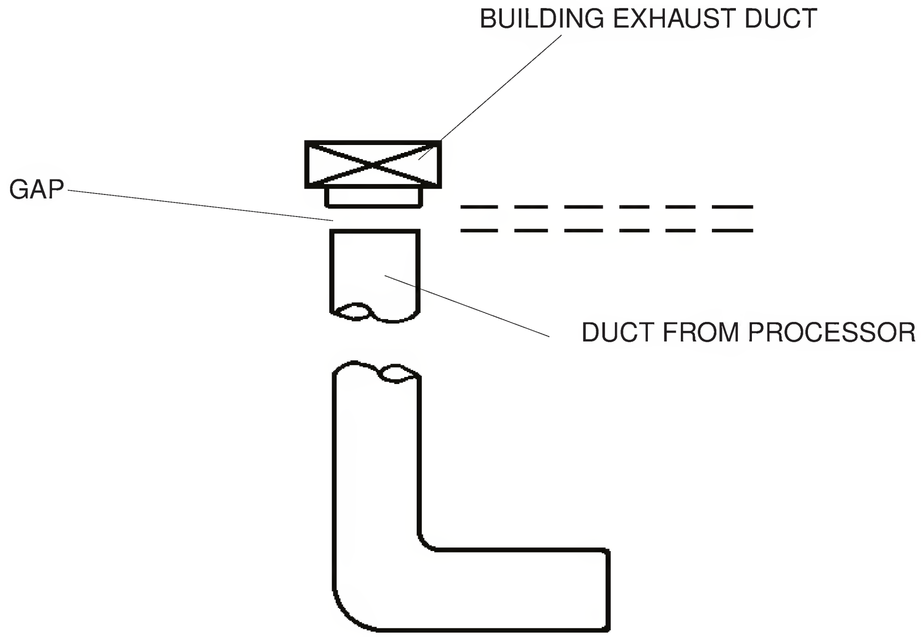


figure 10-7

5. Connect the EXHAUST HOSE to the EXHAUST CONNECTION of the PROCESSOR.

Caution

Do not run the X-OMAT MULTILOADER 300 as long the the pressure of the EXHAUST is not correct ! Incorrect venting may cause serious damage to the X-OMAT MULTILOADER 300 !

FINAL CHECK-OUT:

Note
Use test films, not fresh customer films!

1. Run the MULTILOADER in continuous cycle and look and listen to all functions:

- CASSETTE opening
- FILM pick-up from CASSETTE
- CASSETTE BLOW PIPE FUNCTION
- MAGAZINE opening
- FILM pick-up from MAGAZINE
- BLOW PIPE function

2. Mount all PANELS.

3. Clean all PANELS.

11. COMPONENT LOCATOR

CONNECTORS

EQUIPOTENTIAL CONNECTING DEVICE 11-14
RS232 CONNECTOR FOR LAP TOP 11-14

MOTORS

MOTOR M 1/C_IF CASSETTE INPUT FLAP 11-11
MOTOR M 2/C_IN CASSETTE INPUT 11-8
MOTOR M 3/C_HF HOLDING FINGER 11-11
MOTOR M 4/C_CE CASSETTE CENTRING 11-4
MOTOR M 5/C_OP CASSETTE OPENING 11-8
MOTOR M 6/C_PU CASSETTE FILM PICK UP 11-11
MOTOR M 7/C_PU_RO ROLLER MOTOR 11-11
MOTOR M10/M_PO STEPPER MOTOR FILM POCKET 11-11
MOTOR M11/M_PU_F INTERFACE FLAP 11-11
MOTOR M12/M_PI_R FILM RELEASE 11-11
MOTOR M13/M_PI STEPPER MOTOR PROCESSOR INTERFACE 11-11
MOTOR M14/M_OP MAGAZINE OPENING MECHANISM 11-8
MOTOR M15/M_PU MAGAZINE FILM PICK UP 11-13
MOTOR M16/M_CP COMPRESSOR 11-8
MOTOR M17 FAN 1 POWER SUPPLY 11-15
MOTOR M18 FAN 2 PROCESSOR INTERFACE 11-11

PRINTED CIRCUIT BOARDS

PCB A1 MAIN PROCESSOR 11-4
PCB A2 OPERATOR INTERFACE 11-8
PCB A3/1 SLAVE PROCESSOR CASSETTE INTERFACE 11-4
PCB A3/2 SLAVE PROCESSOR MAGAZINE INTERFACE 11-4
PCB A4 MAGAZINE INTERFACE 11-4
PCB A5 FILM POCKET 11-13
PCB A6/1 MAGAZINE SENSE LEVEL 1 11-12
PCB A6/2 MAGAZINE SENSE LEVEL 2 11-12
PCB A6/3 MAGAZINE SENSE LEVEL 3 11-12
PCB A 7 LEVEL CONTROL 11-10
PCB A8 CASSETTE INTERFACE 11-4
PCB A9 DC MOTOR DRIVER 11-8
PCB A10/1 CASSETTE WIDTH DETECTION 11-6
PCB A10/2 CASSETTE LENGTH DETECTION 11-4
PCB A10/3 CASSETTE OPENER POSITION 11-4
PCB A11 FAN 2 11-10

SENSORS

SENSOR B 1/C_FD FRONT DOOR 11-7
SENSOR B 2/C_IN_R CASSETTE REGISTRATION 11-7
SENSOR B 3/C_IF_EO CASSETTE INPUT FLAP END SWITCH OPEN 11-7
SENSOR B 4/C_IF_EC CASSETTE INPUT FLAP END SWITCH CLOSED 11-7
SENSOR B 5/C_IN_EL CASSETTE IN END SWITCH LEFT 11-6
SENSOR B 6/C_IN_EM CASSETTE IN END SWITCH MIDDLE 11-6
SENSOR B 7/C_IN_ER CASSETTE IN END SWITCH RIGHT 11-6
SENSOR B 8/C_HF_W CASSETTE WIDTH DETECTION (PCB A10/1) 11-6
SENSOR B 9/C_CE_EC CENTRING BARS END SWITCH CLOSED 11-6
SENSOR B10/C_CE_EO CENTRING BARS END SWITCH OPEN 11-6
SENSOR B11/C_CE_CL CENTRED LEFT 11-6
SENSOR B12/C_CE_CR CASSETTE CENTRED RIGHT 11-6
SENSOR B13/C_CE_L CASSETTE LENGTH DETECTION 11-4
SENSOR B14/C_OP_P CASSETTE OPENER POSITION 11-4
SENSOR B15/C_OP_EO CASSETTE OPENER END SWITCH OPEN 11-7
SENSOR B16/C_OP_RO CASSETTE REALLY OPENED 11-5
SENSOR B17/C_PU_EF FILM PICK UP END SWITCH FRONT 11-5
SENSOR B18/C_PU_ER FILM PICK UP END SWITCH REAR 11-5
SENSOR B19/C_PU_T SUCKER BAR TILT 11-5
SENSOR B20/C_PU_VO VACUUM OFF 11-5
SENSOR B21/C_T2_L FILM TYPE 2 DETECTION LEFT 11-6
SENSOR B22/C_T2_R FILM TYPE 2 DETECTION RIGHT 11-6
SENSOR B23/C_TI TOP COVER INTERLOCK 11-5
SENSOR B24/C_IN R2 CASSETTE REGISTRATION 2 11-10
SENSOR B25 FILM DETECTOR right 11-7
SENSOR B26 FILM DETECTOR left 11-7
SENSOR B30/M_PO_HP HOME POSITION 11-10
SENSOR B31/M_PO_ES END SWITCH 11-10
SENSOR B32/M_PO_ML MAGAZINE LEVEL 11-10
SENSOR B33/M_PI_F INTERFACE FLAP CLOSED END SWITCH 11-10
SENSOR B34/M_PI_R FILM RELEASE CLOSED END SWITCH 11-10
SENSOR B35/M_PI_B FILM IN INTERFACE BOTTOM 11-10
SENSOR B36/M_OP_EO MAGAZINE OPENING END SWITCH 11-7
SENSOR B37/CM_OP_EC MAGAZINE CLOSING END SWITCH 11-7
SENSOR B38.....B42 PCB A6/1 11-12
SENSOR B43/M_CO_1 MAGAZINE CLOSED DETECTION LEVEL 1 11-4
SENSOR B44.....B48 PCB A6/2 11-12
SENSOR B49/M_CO_2 MAGAZINE CLOSED DETECTION LEVEL 2 11-4
SENSOR B50.....B54 PCB A6/3 11-12
SENSOR B55/M_CO_3 MAGAZINE CLOSED DETECTION LEVEL 3 11-4
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SENSOR B59/M_PU_DS DOUBLE SHEET DETECTOR 11-13
SENSOR B60/M_PU_E MAGAZINE EMPTY 11-13
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SOLENOID VALVES

SOLENOID VALVE Y 3/C_OP_B CASSETTE BLOWING 11-9
SOLENOID VALVE Y 5/PU_S CASSETTE SUCKING 11-9
SOLENOID VALVE Y 6/C_PU_VE CASSETTE SUCKER VENTING 11-9
SOLENOID VALVE Y10/M_PU_BS MAGAZINE BLOW SUCKER 11-9
SOLENOID VALVE Y11/M_PU_B MAGAZINE BLOWING 11-9
SOLENOID VALVE Y12/M_PU_S MAGAZINE SUCKING 11-9

SOLENOIDS

SOLENOID Y 1/C_FD_L FRONT DOOR SOLENOID LEFT 11-9
SOLENOID Y 2/C_FD_R FRONT DOOR SOLENOID RIGHT 11-9
SOLENOID Y 4/C_OP CASSETTE OPENER 11-4
SOLENOID Y 7/C_PU SUCKER BAR TILTING 11-5
SOLENOID Y14/M_PU SUCKER BAR TILTING 11-13
SOLENOID Y15/M_PU_DS DOUBLE SHEET DETECTION 11-13

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SWITCH S2 INTERLOCK OVERRIDE 11-10
SWITCH S3 TOP COVER 11-5
SWITCH S4 FRONT DOOR 11-7

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CIRCUIT BREAKER CB1 .... 11-10, 11-14
CIRCUIT BREAKER CB2 .... 11-10, 11-14
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CONTACTOR K2 11-15
FUSE F1.....F11 11-14
LINE FILTER LF1 11-15
POWER SUPPLY PS1 .... 11-12, 11-14
TRANSFORMER T1 11-15
TRANSFORMER T2 11-15

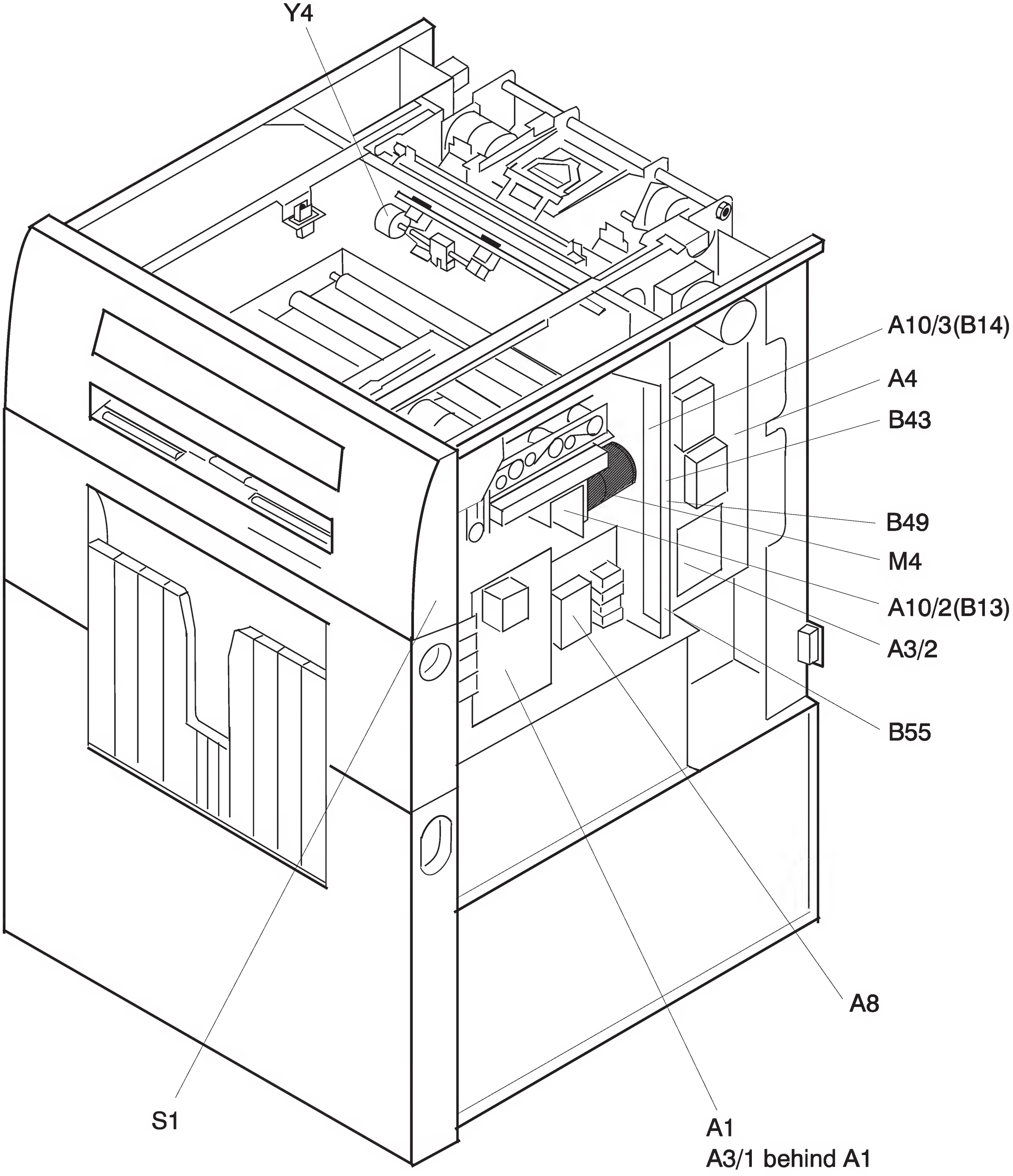
Y4
A10/3(B14)
A4
B43
B49
M4
A10/2(B13)
A3/2
B55
A8
S1
A1
A3/1 behind A1

figure 11-1

TOP VIEW

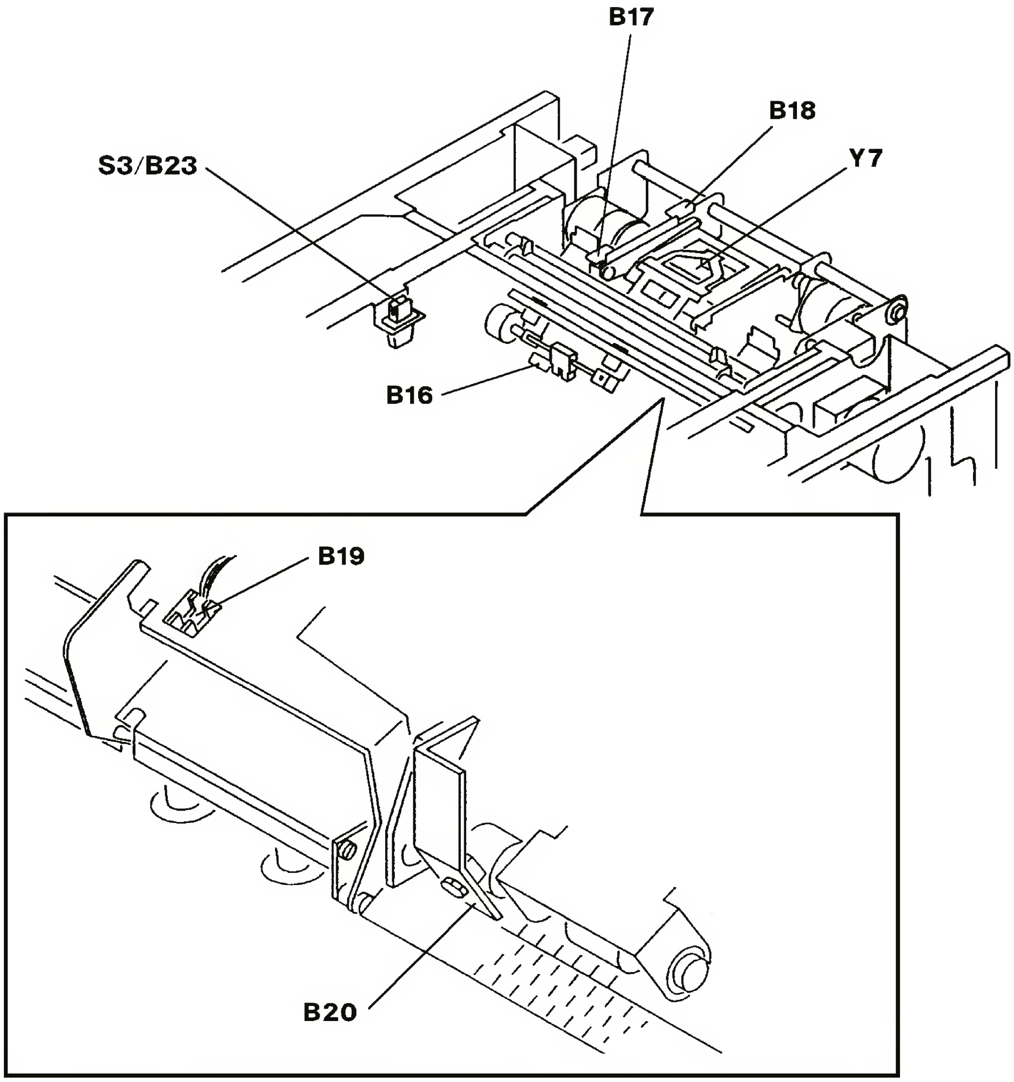
B17
B18
S3/B23
Y7
B16
B19
B20

figure 11-2

TOP VIEW

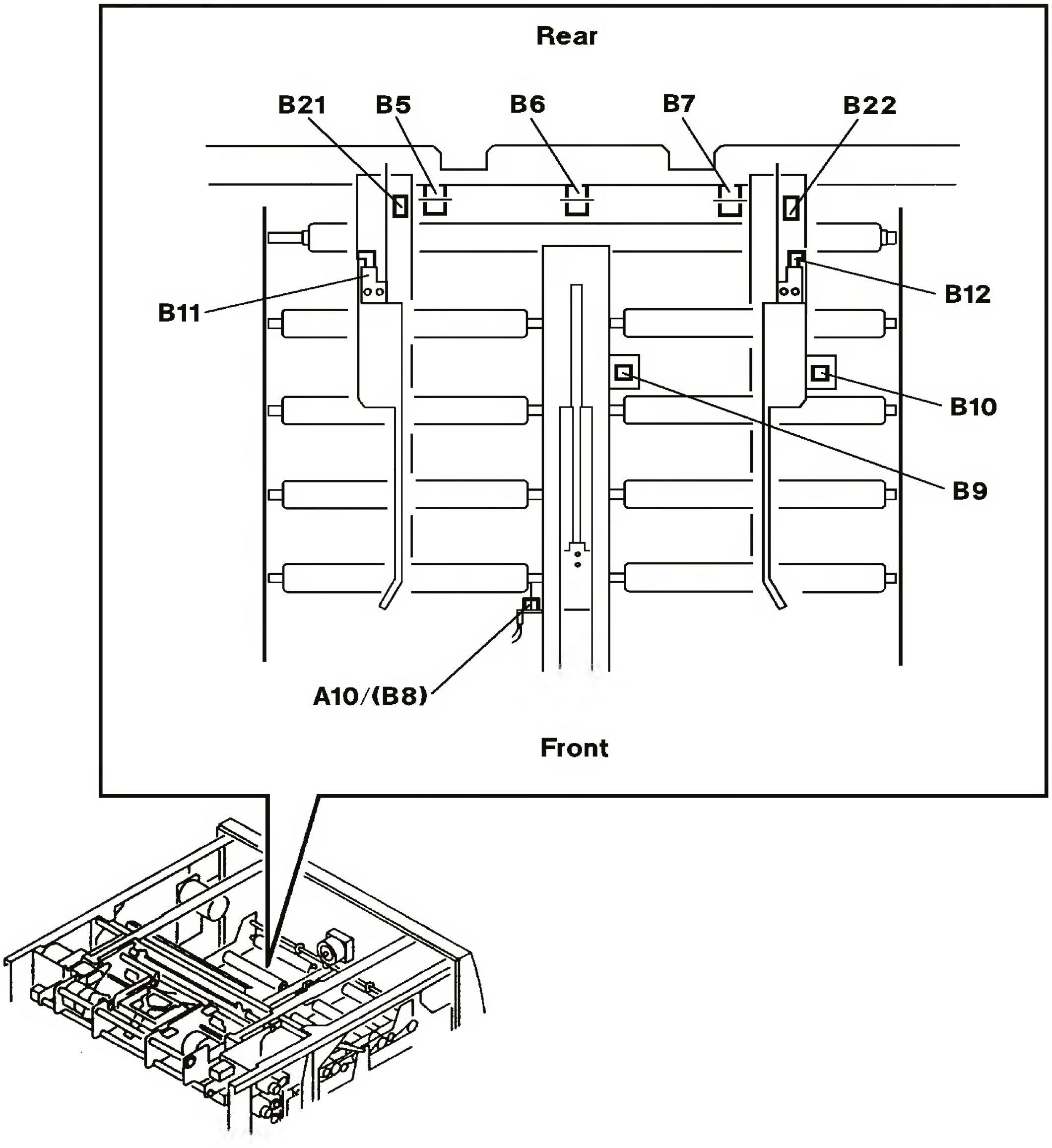
Rear
B21
B5
B6
B7
B22
B11
B12
B10
B9
A10/(B8)
Front

figure 11-3

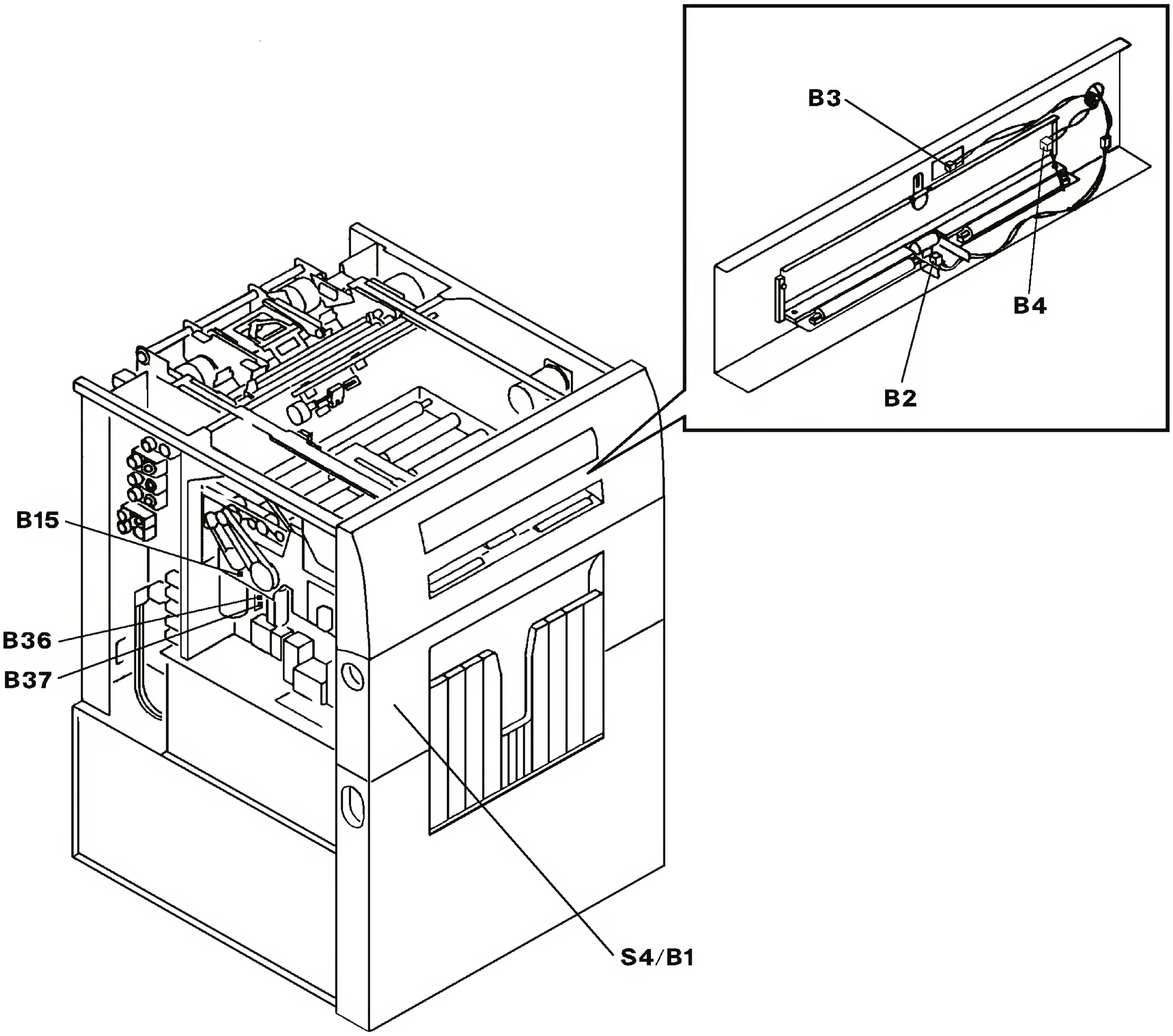
B3
B4
B2
B15
B36
B37
S4/B1

figure 11-4

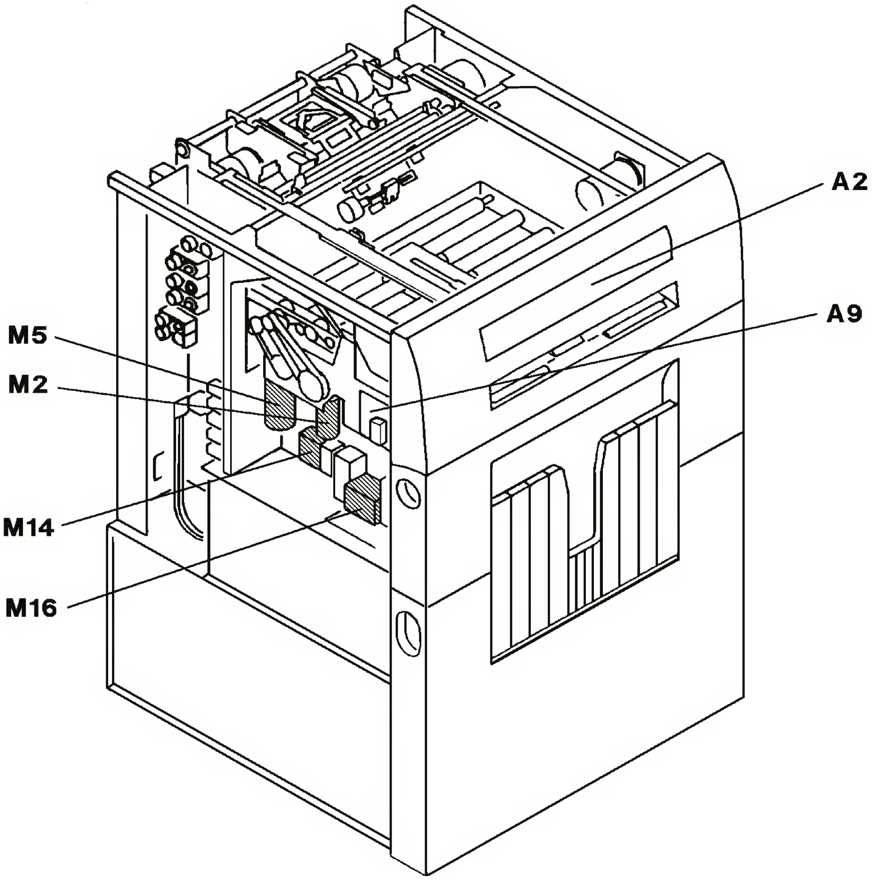
A2
A9
M5
M2
M14
M16

figure 11-5

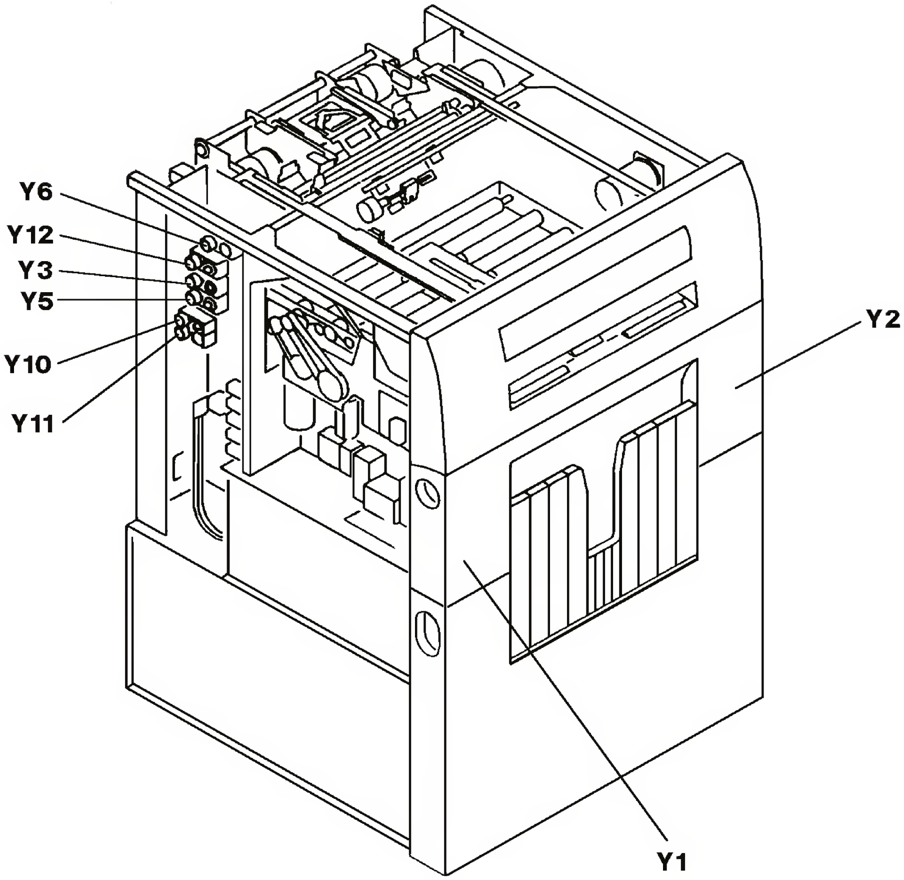
Y6
Y12
Y3
Y5
Y10
Y11
Y2
Y1

figure 11-6

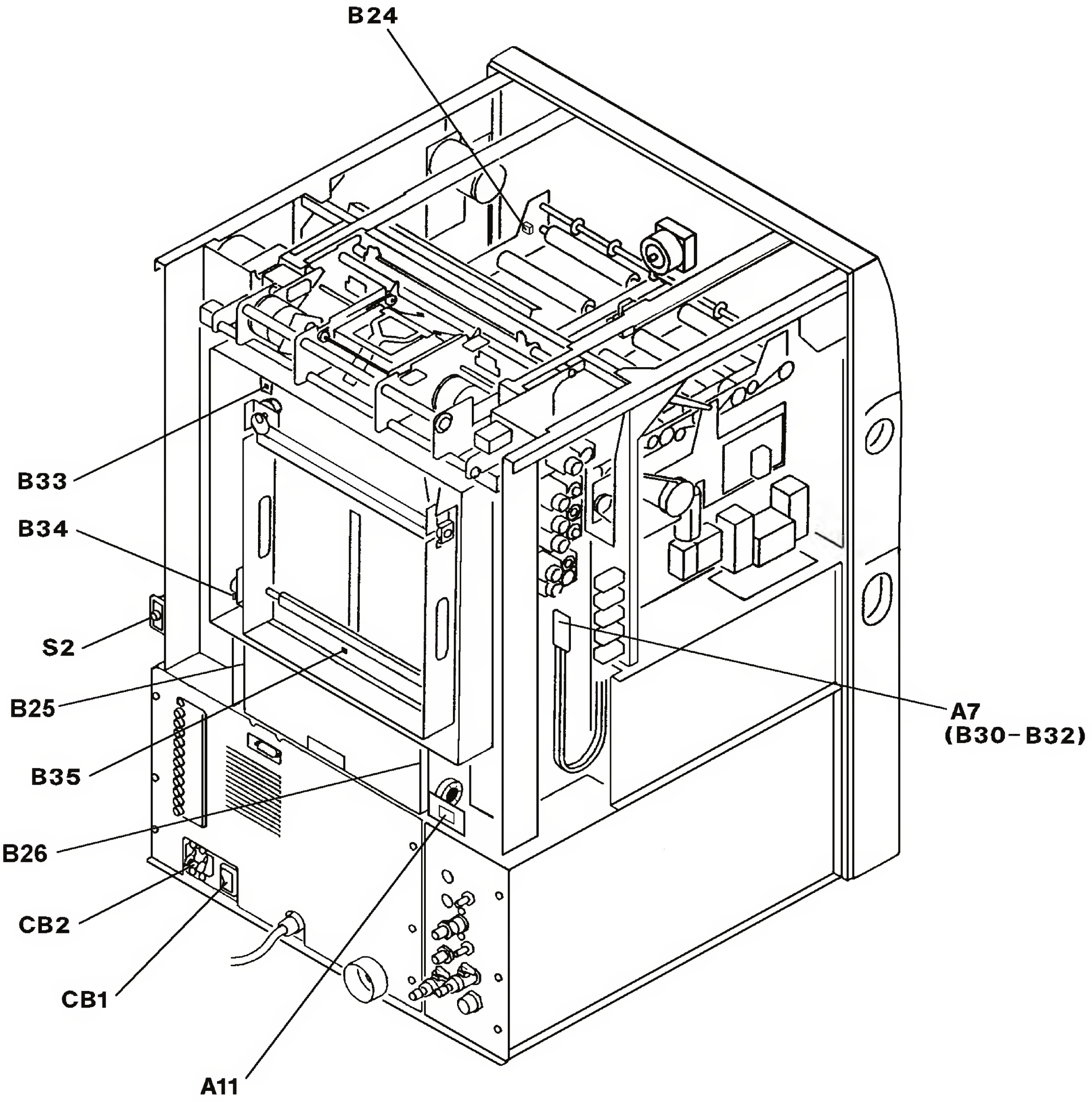
B24
B33
B34
S2
B25
B35
B26
CB2
CB1
A11
A7
(B30–B32)

figure 11-7

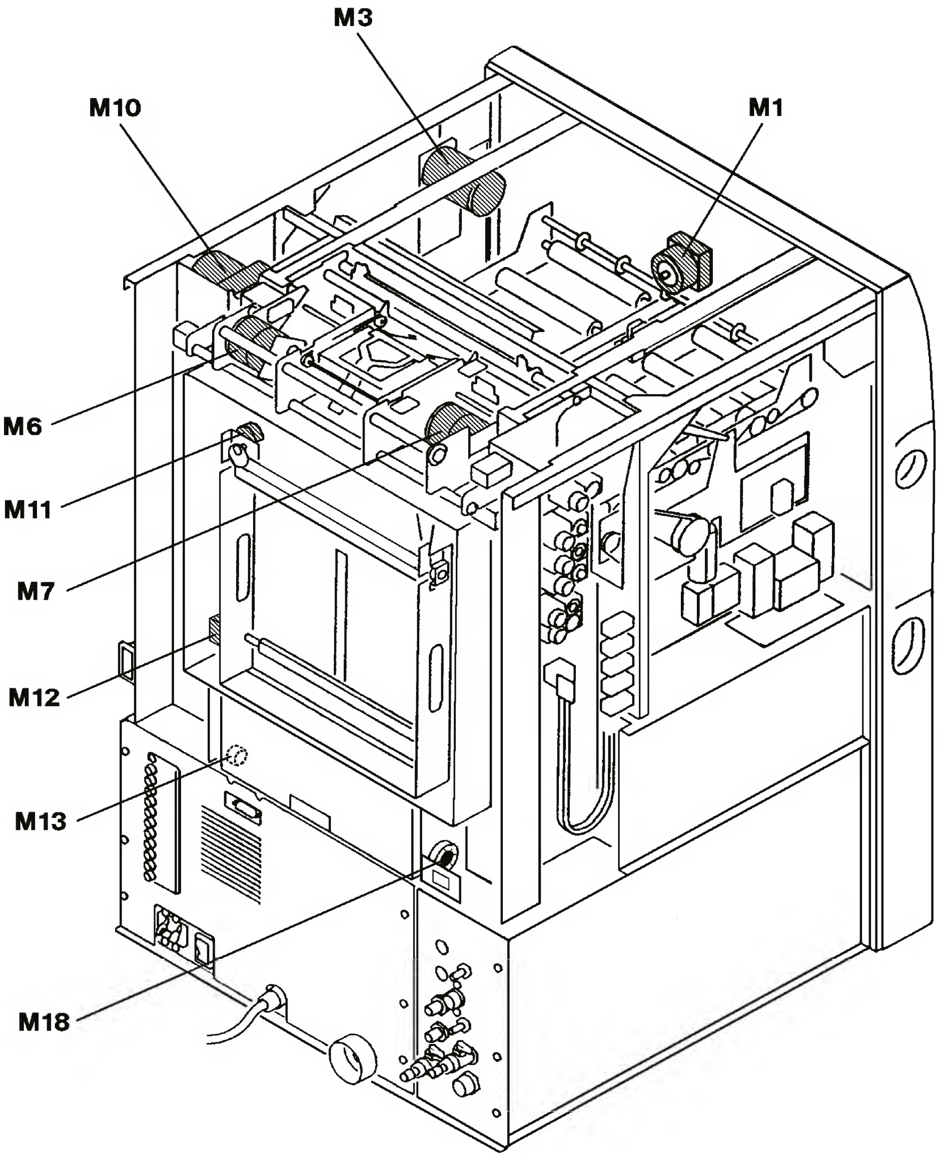
M3
M10
M1
M6
M11
M7
M12
M13
M18

figure 11-8

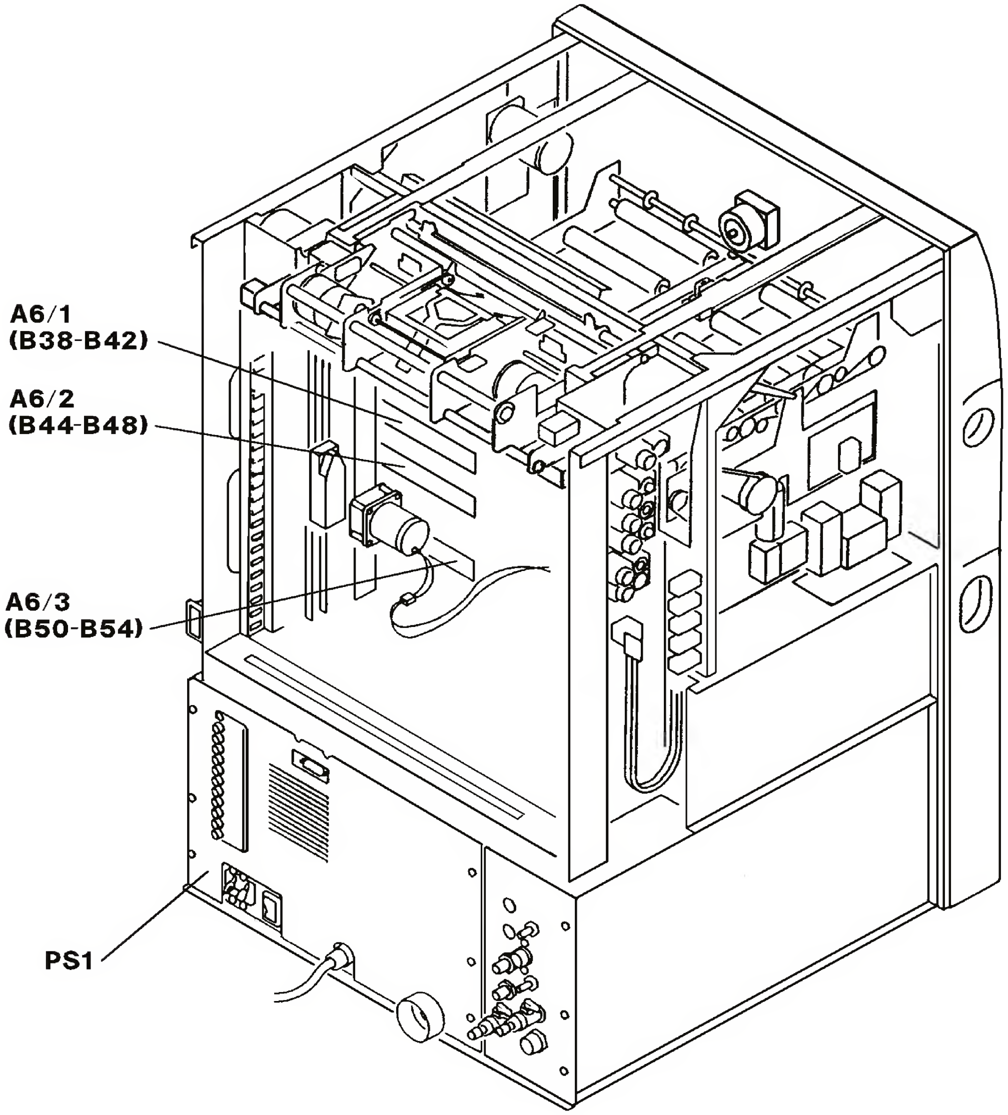
A6/1
(B38-B42)
A6/2
(B44-B48)
A6/3
(B50-B54)
PS1

figure 11-9

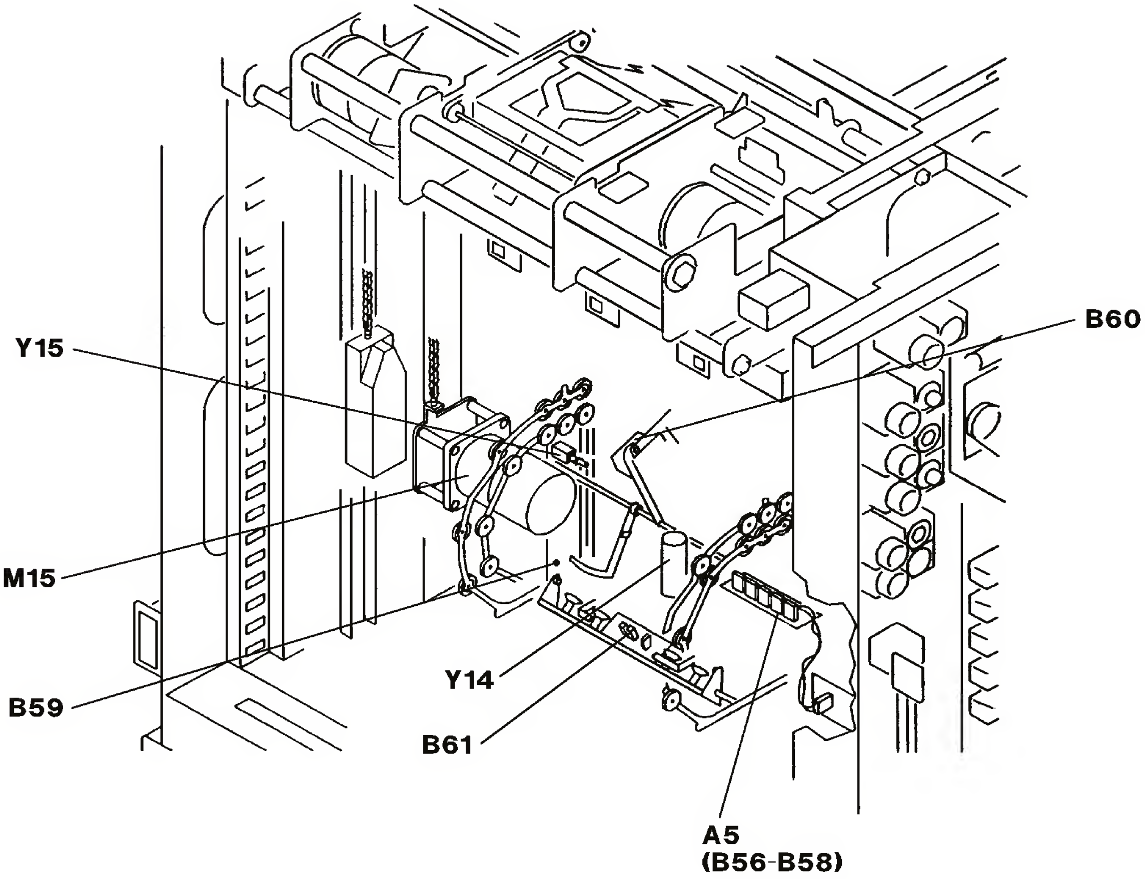
B60
Y15
M15
B59
Y14
B61
A5
(B56-B58)

figure 11-10

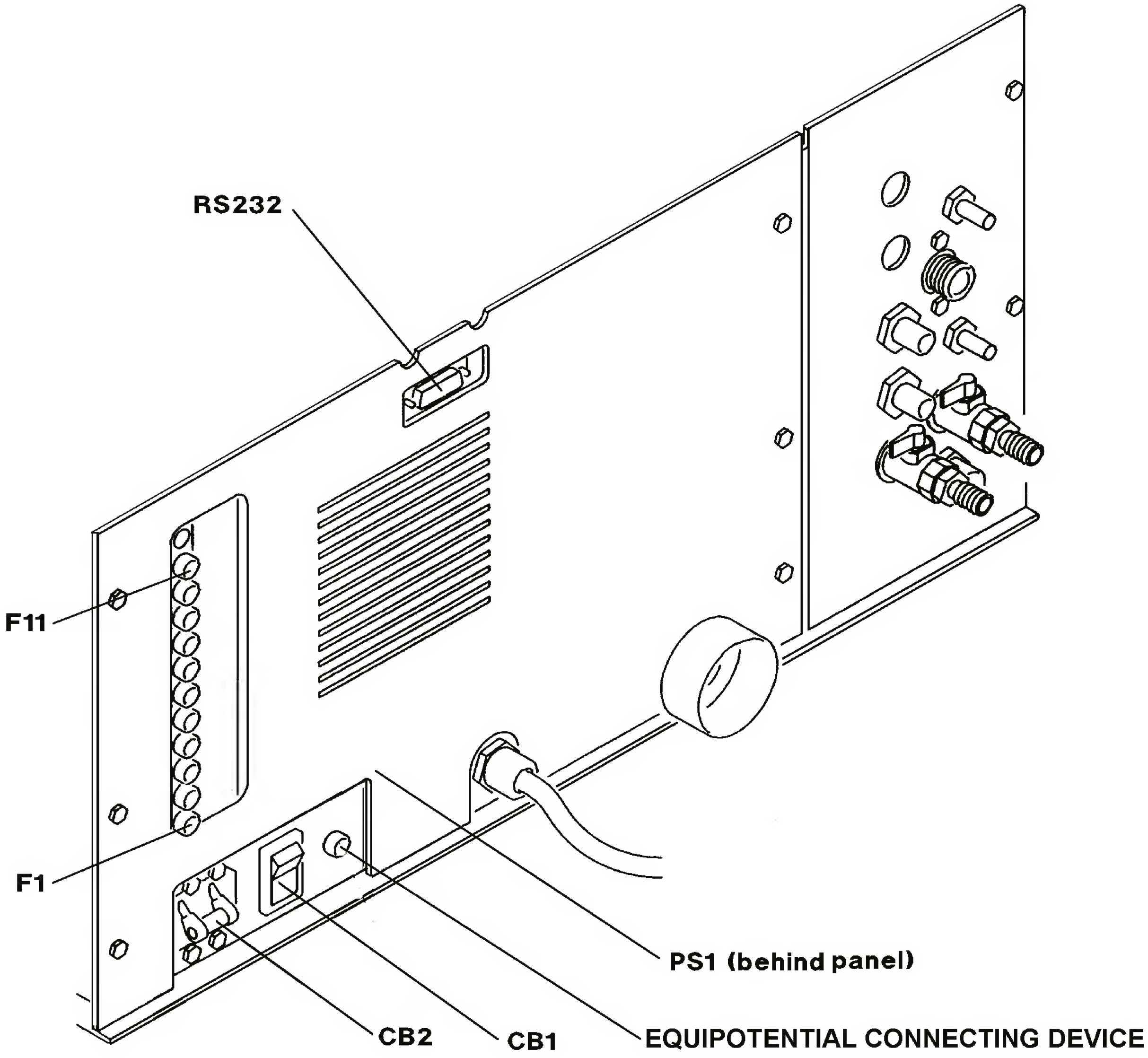
RS232
F11
F1
CB2
CB1
PS1 (behind panel)
EQUIPOTENTIAL CONNECTING DEVICE

figure 11-11

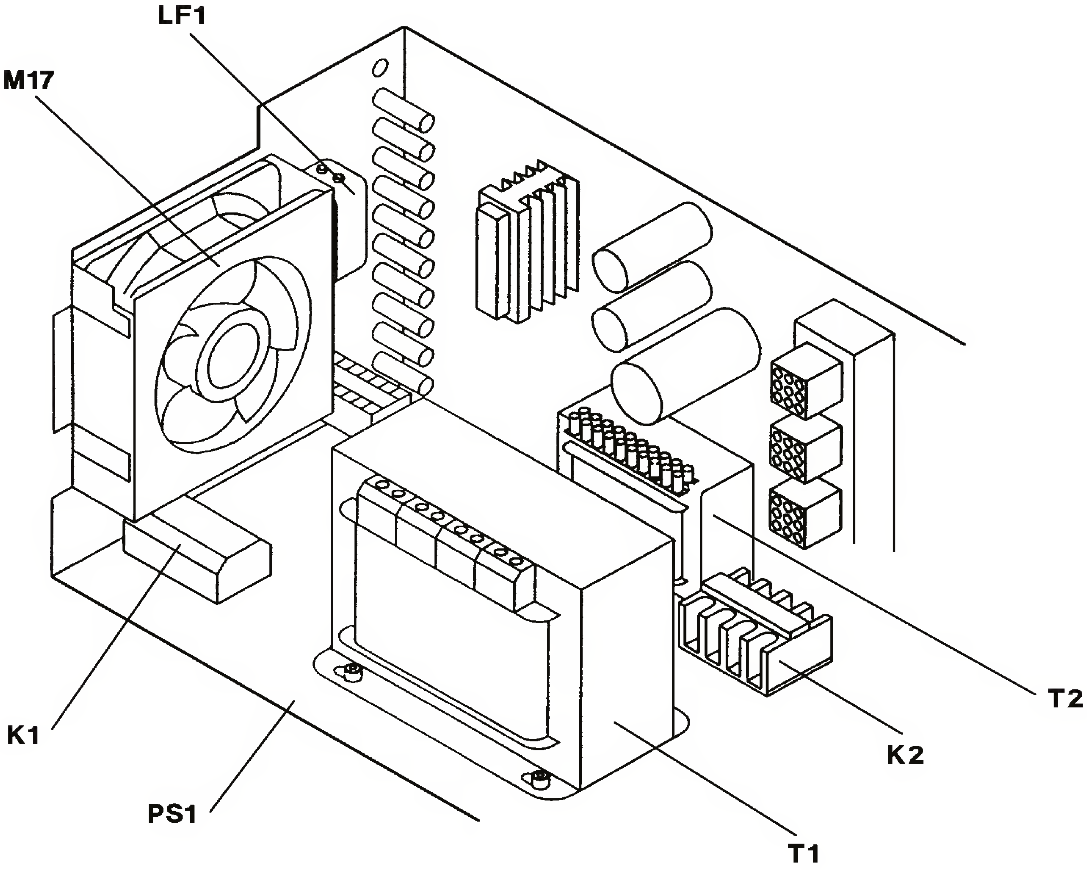
LF1
M17
K1
PS1
T1
K2
T2

figure 11-12

Kodak AG
Hedelfinger Str. 54-60
70327 Stuttgart
Germany

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